

=> fil reg

FILE 'REGISTRY' ENTERED AT 12:31:31 ON 15 APR 2009

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STRUCTURE FILE UPDATES: 14 APR 2009 HIGHEST RN 1134418-75-9

DICTIONARY FILE UPDATES: 14 APR 2009 HIGHEST RN 1134418-75-9

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TSCA INFORMATION NOW CURRENT THROUGH January 9, 2009.

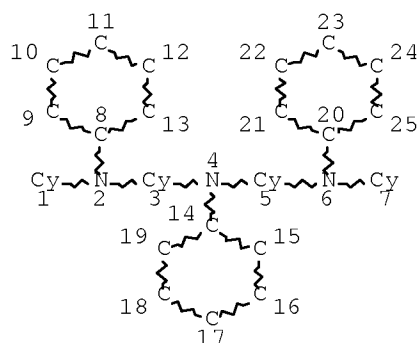
Please note that search-term pricing does apply when conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and predicted properties as well as tags indicating availability of experimental property data in the original document. For information on property searching in REGISTRY, refer to:

<http://www.cas.org/support/stngen/stdoc/properties.html>

=> d que

L3 STR



NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RSPEC I

NUMBER OF NODES IS 25

STEREO ATTRIBUTES: NONE

L7 1148 SEA FILE=REGISTRY SSS FUL L3

L9 1604 SEA FILE=HCAPLUS ABB=ON PLU=ON L7

L11 191 SEA FILE=HCAPLUS ABB=ON PLU=ON L9 (L) PREP/RL

L12 77652 SEA FILE=HCAPLUS ABB=ON PLU=ON "ELECTROLUMINESCENT DEVICES"+PFT,NT/CT

L13 109 SEA FILE=HCAPLUS ABB=ON PLU=ON L11 AND L12

10/558,578

L14	21853	SEA FILE=HCAPLUS ABB=ON	PLU=ON	"CONDUCTING POLYMERS"+PFT, NT/CT
L15	3	SEA FILE=HCAPLUS ABB=ON	PLU=ON	L13 AND L14
L16	4	SEA FILE=HCAPLUS ABB=ON	PLU=ON	L13 AND ?CONDUCT?(2A)POLYM ER?
L17	21	SEA FILE=HCAPLUS ABB=ON	PLU=ON	L13 AND ?CONDUCT?
L18	21	SEA FILE=HCAPLUS ABB=ON	PLU=ON	(L15 OR L16 OR L17)
L19	41	SEA FILE=HCAPLUS ABB=ON	PLU=ON	L13 AND PRP/RL
L20	53	SEA FILE=HCAPLUS ABB=ON	PLU=ON	L18 OR L19
L21	25	SEA FILE=HCAPLUS ABB=ON	PLU=ON	L20 AND (1840-2003)/PRY,AY ,PY

=> => fil hcap  
FILE 'HCAPLUS' ENTERED AT 12:32:15 ON 15 APR 2009  
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FILE COVERS 1907 - 15 Apr 2009 VOL 150 ISS 16  
FILE LAST UPDATED: 14 Apr 2009 (20090414/ED)

HCAplus now includes complete International Patent Classification (IPC) reclassification data for the third quarter of 2008.

CAS Information Use Policies apply and are available at:

<http://www.cas.org/legal/infopolicy.html>

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d l21 1-25 ibib ed abs hitstr hitind

L21 ANSWER 1 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 2005:673666 HCAPLUS Full-text  
DOCUMENT NUMBER: 143:163040  
TITLE: Triarylamine derivatives and its use as hole  
transport material in organic electroluminescent  
and electrophotographic devices  
INVENTOR(S): Richter, Andreas; Lischewski, Volker  
PATENT ASSIGNEE(S): Sensient Imaging Technologies GmbH, Germany  
SOURCE: Ger. Offen., 16 pp.  
CODEN: GWXXBX  
DOCUMENT TYPE: Patent  
LANGUAGE: German  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

10/558,578

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 102004020046	A1	20050728	DE 2004-102004020046	20040421

PRIORITY APPLN. INFO.:

DE 2003-10361425 IA 20031222  
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OTHER SOURCE(S): MARPAT 143:163040

ED Entered STN: 31 Jul 2005

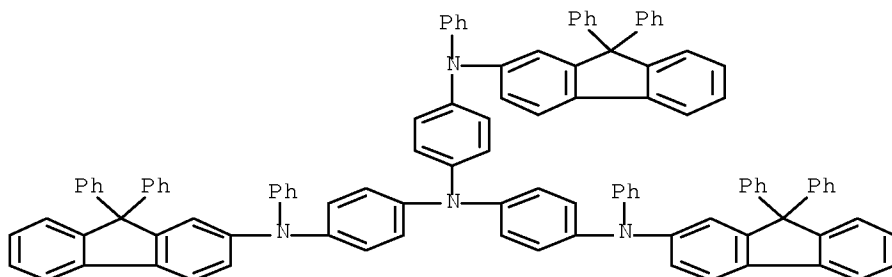
AB The invention relates to new triarylamine derivs., which are so-called starburst mols. and whose application as a hole transport material in electrophotog. and electroluminescent devices. The new compds., showing high crystallization temps., are represented by N(-Ar1-N(Ar4)(Ar5))(-Ar2-N(Ar6)(Ar7))(-Ar3-N(Ar8)(Ar9)) [Ar1-3 = C6-20-aryl; Ar4-9 = Ph, biphenyl, methylphenyl, naphthyl, phenanthrenyl, anthracenyl, fluorenyl, triarylmethyl-aryl, triarylsilyl-aryl; at least one of Ar4-9 is triarylmethyl-aryl or triarylsilyl-aryl].

IT 860465-06-1P 860465-11-8P

(preparation of triarylamine derivs. suitable as as hole transport material for organic electroluminescent and electrophotog. devices)

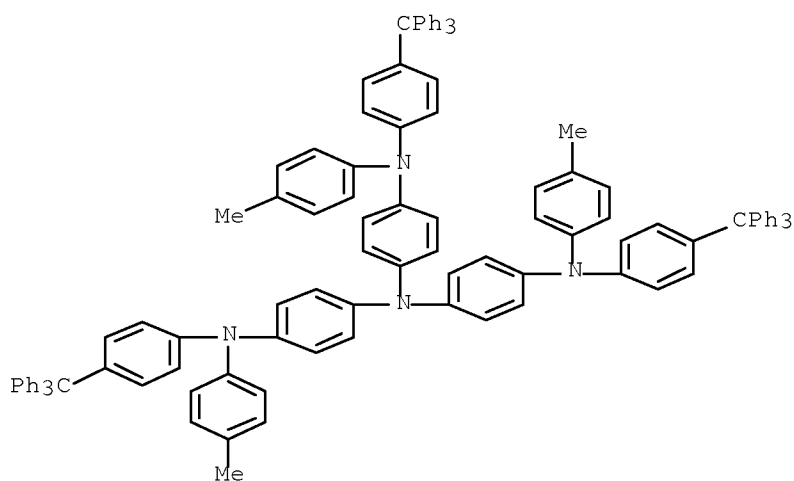
RN 860465-06-1 HCAPLUS

CN 1,4-Benzenediamine, N-(9,9-diphenyl-9H-fluoren-2-yl)-N',N'-bis[4-[(9,9-diphenyl-9H-fluoren-2-yl)phenylamino]phenyl]-N-phenyl- (9CI) (CA INDEX NAME)

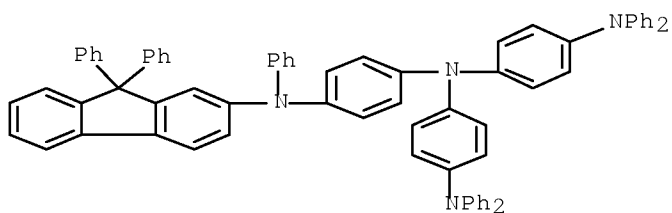


RN 860465-11-8 HCAPLUS

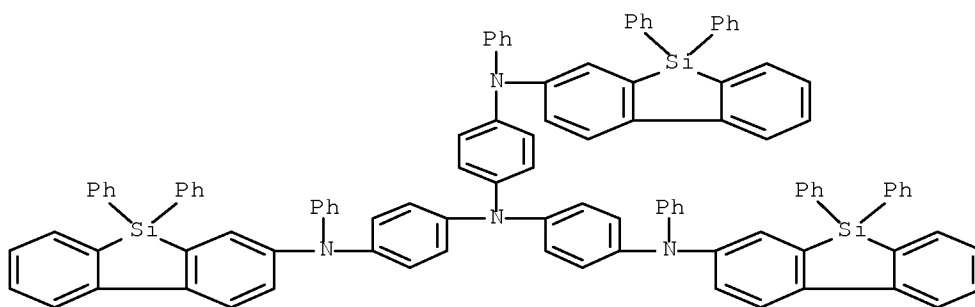
CN 1,4-Benzenediamine, N-(4-methylphenyl)-N',N'-bis[4-[(4-methylphenyl)[4-(triphenylmethyl)phenyl]amino]phenyl]-N-[4-(triphenylmethyl)phenyl]- (9CI) (CA INDEX NAME)



IT 860465-07-2P 860465-08-3P 860465-09-4P  
 860465-10-7P 860465-12-9P 860465-13-0P  
 (preparation of triarylamine derivs. suitable as as hole transport  
 material for organic electroluminescent and electrophotog. devices)  
 RN 860465-07-2 HCAPLUS  
 CN 1,4-Benzenediamine, N1,N1-bis[4-(diphenylamino)phenyl]-N4-(9,9-  
 diphenyl-9H-fluoren-2-yl)-N4-phenyl- (CA INDEX NAME)

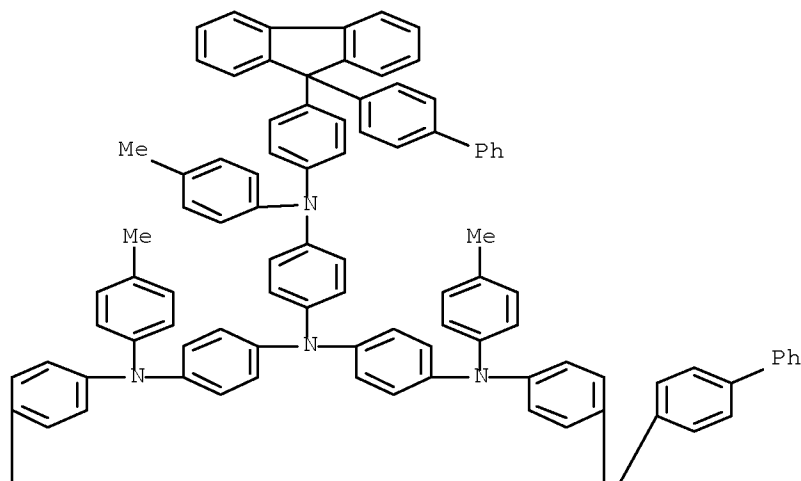


RN 860465-08-3 HCAPLUS  
 CN 1,4-Benzenediamine, N1-(9,9-diphenyl-9H-silafluoren-2-yl)-N4,N4-bis[4-  
 [(9,9-diphenyl-9H-silafluoren-2-yl)phenylamino]phenyl]-N1-phenyl- (CA  
 INDEX NAME)

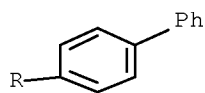
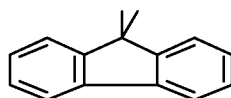
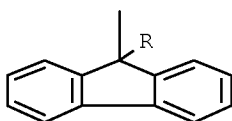


RN 860465-09-4 HCAPLUS  
 CN 1,4-Benzenediamine, N-[4-(9-[1,1'-biphenyl]-4-yl-9H-fluoren-9-yl)phenyl]-N',N'-bis[4-[[4-(9-[1,1'-biphenyl]-4-yl-9H-fluoren-9-yl)phenyl](4-methylphenyl)amino]phenyl]-N-(4-methylphenyl)- (9CI) (CA INDEX NAME)

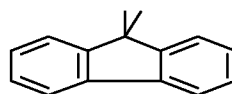
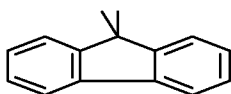
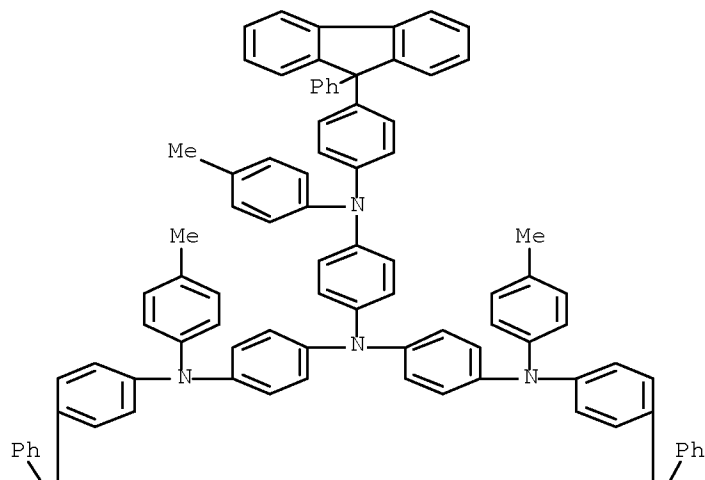
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PAGE 2-A

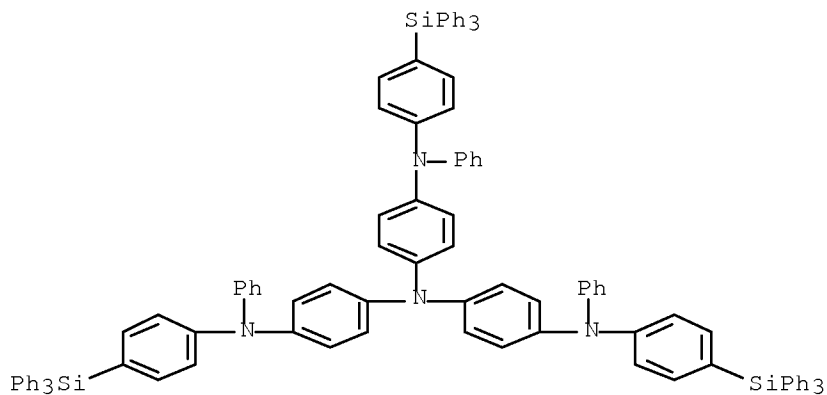


RN 860465-10-7 HCAPLUS  
 CN 1,4-Benzenediamine, N-(4-methylphenyl)-N',N'-bis[4-[(4-methylphenyl)[4-(9-phenyl-9H-fluoren-9-yl)phenyl]amino]phenyl]-N-[4-(9-phenyl-9H-fluoren-9-yl)phenyl]- (9CI) (CA INDEX NAME)



RN 860465-12-9 HCAPLUS

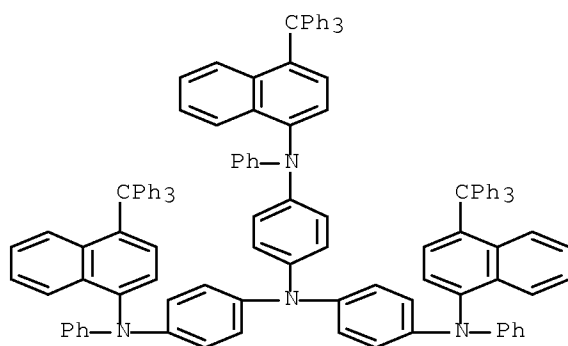
CN 1,4-Benzenediamine, N1-phenyl-N4,N4-bis[4-[phenyl[4-(triphenylsilyl)phenyl]amino]phenyl]-N1-[4-(triphenylsilyl)phenyl]-  
(CA INDEX NAME)



RN 860465-13-0 HCAPLUS

CN 1,4-Benzenediamine, N1-phenyl-N4,N4-bis[4-[phenyl[4-(triphenylmethyl)-1-naphthalenyl]amino]phenyl]-N1-[4-(triphenylmethyl)-1-naphthalenyl]-

(CA INDEX NAME)



IC ICM C07C211-54  
ICS C07F007-08; C09K011-06; H01L051-30; G03G005-00

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 73

ST triarylamine hole transport material org electroluminescent device  
electrophotog photoconductor

IT Electroluminescent devices  
Electrophotographic photoconductors (photoreceptors)  
Hole transport  
(triarylamine derivs. and its use as hole transport material in organic electroluminescent and electrophotog. devices)

IT 860465-06-1P 860465-11-8P  
(preparation of triarylamine derivs. suitable as as hole transport material for organic electroluminescent and electrophotog. devices)

IT 860465-07-2P 860465-08-3P 860465-09-4P  
860465-10-7P 860465-12-9P 860465-13-0P  
(preparation of triarylamine derivs. suitable as as hole transport material for organic electroluminescent and electrophotog. devices)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L21 ANSWER 2 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2005:259435 HCAPLUS Full-text

DOCUMENT NUMBER: 142:344854

TITLE: Organic electroluminescent devices and production process thereof

INVENTOR(S): Kato, Tetsuya; Kojima, Kazushige; Kajioaka, Takanori; Ishii, Masahiko

PATENT ASSIGNEE(S): Denso Corporation, Japan

SOURCE: U.S. Pat. Appl. Publ., 40 pp.  
CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20050064237	A1	20050324	US 2004-852698	20040525

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US 7357992	B2	20080415		
JP 2005108804	A	20050421	JP 2004-41458	20040218
			<--	
US 20070293704	A1	20071220	US 2007-882124	20070731
			<--	
US 7402701	B2	20080722		
PRIORITY APPLN. INFO.:			JP 2003-149516	A 20030527
			<--	
			JP 2003-316872	A 20030909
			<--	
			JP 2004-41458	A 20040218
			US 2004-852698	A1 20040525

OTHER SOURCE(S): MARPAT 142:344854

ED Entered STN: 25 Mar 2005

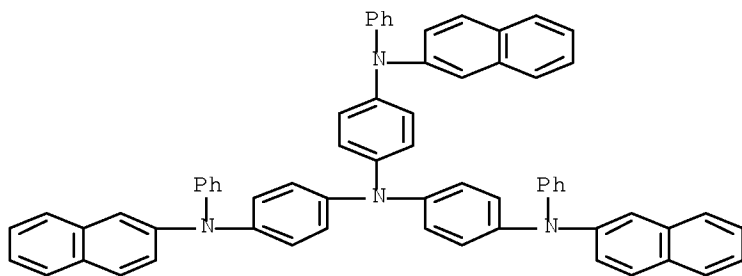
AB Organic electroluminescent devices are described which comprise a pair of electrodes sandwiching a light-emitting layer comprising a mixture of a hole-transporting material consisting of a tertiary amine compound, an electron-transporting material and a light-emitting additive material, in which the tertiary amine compound has  $\geq 2$  oxidation potentials differing by  $\geq 0.22$  V (determined by cyclic voltammetry) and a glass transition temperature of  $\geq 100^\circ$ , and the electron-transporting material has a glass transition temperature of  $\geq 100^\circ$ . Devices are described which entail employ specific tert. amine compds. Methods for fabricating the devices are also described.

IT 185690-41-9P

(organic electroluminescent devices using tertiary amine hole-transporting material and their fabrication)

RN 185690-41-9 HCAPLUS

CN 1,4-Benzenediamine, N1-2-naphthalenyl-N4,N4-bis[4-(2-naphthalenylphenylamino)phenyl]-N1-phenyl- (CA INDEX NAME)



IC ICM H05B033-14

INCL 428690000; X42-891.7; X31-350.4; X31-350.6; X42-7 6.6

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 76

IT Semiconductor device fabrication

(organic electroluminescent devices using tertiary amine hole-transporting material and their fabrication)

IT Electroluminescent devices

(organic; organic electroluminescent devices using tertiary amine hole-transporting material and their fabrication)

IT 123847-85-8P, N,N'-Di(1-naphthyl)-N,N'-diphenylbenzidine



10/558,578

167218-46-4P ~~185690-41-9P~~ 185846-70-2P 209980-47-2P  
268730-91-2P 697234-81-4P 848465-74-7P

(organic electroluminescent devices using tertiary amine  
hole-transporting material and their fabrication)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L21 ANSWER 3 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2004:1059414 HCAPLUS Full-text

DOCUMENT NUMBER: 142:39562

TITLE: Manufacture of solution-processable  
~~semiconductive polymers~~ with  
improved hole transporting properties and their  
use

INVENTOR(S): Wallace, Paul

PATENT ASSIGNEE(S): Covion Organic Semiconductors G.m.b.H., Germany

SOURCE: PCT Int. Appl., 25 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2004106409	A1	20041209	WO 2004-EP5818	20040528

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W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,  
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,  
KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,  
SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,  
VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,  
AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,  
DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL,  
PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG

EP 1633801	A1	20060315	EP 2004-739446	20040528
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EP 1633801	B1	20080409		
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R: DE, FR, GB, NL

CN 1768093	A	20060503	CN 2004-80008649	20040528
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JP 2007504342	T	20070301	JP 2006-529951	20040528
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US 20060241202	A1	20061026	US 2006-558578	20060201
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PRIORITY APPLN. INFO.: EP 2003-12409 A 20030530

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WO 2004-EP5818 W 20040528

ED Entered STN: 10 Dec 2004

AB The ~~semiconductive polymers~~ are useful for thin film electronic and optical  
devices, such as organic light emitting diodes (OLED) and photovoltaic  
devices, e.g. solar cells and photo detectors. The ~~semiconductive polymers~~  
can be obtained by the Yamamoto or Suzuki polymerization method where increase  
of the number of nitrogen atoms in the backbone of repeat unit of a

semiconducting polymer improves its hole transporting capability. Appropriate selection of the polymerizable group of a monomer of a repeat unit enables the monomer to be polymerized by the Yamamoto or Suzuki polymerization which afford greater control over regioregularity of polymers as compared to prior art polymers.

IT 807374-47-6P 807374-61-4P

(manufacture of solution-processable semiconductive polymers with improved hole transporting properties and their use)

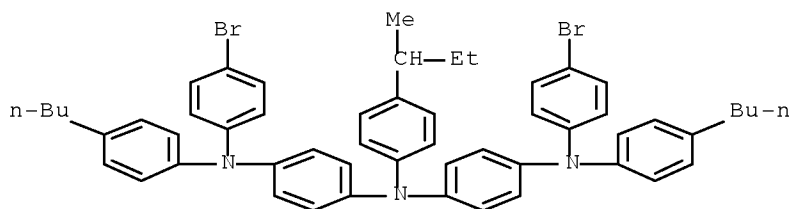
RN 807374-47-6 HCAPLUS

CN 1,4-Benzenediamine, N-(4-bromophenyl)-N'-[4-[(4-bromophenyl)(4-butylphenyl)amino]phenyl]-N-(4-butylphenyl)-N'-[4-(1-methylpropyl)phenyl]-, polymer with 2,2'-(6,12-dihydro-6,6,12,12-tetraoctylindeno[1,2-b]fluorene-2,8-diyl)bis[4,4,5,5-tetramethyl-1,3,2-dioxaborolane] (9CI) (CA INDEX NAME)

CM 1

CRN 807374-46-5

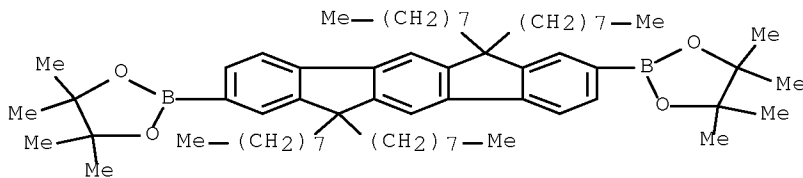
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CM 2

CRN 628303-20-8

CMF C64 H100 B2 O4



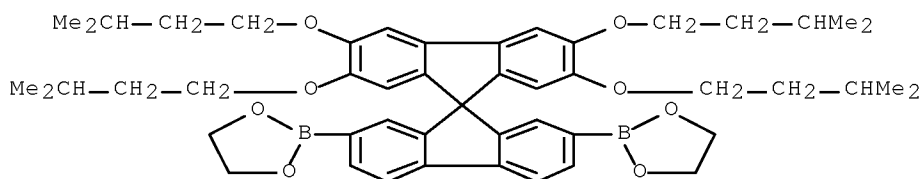
RN 807374-61-4 HCAPLUS

CN 1,4-Benzenediamine, N-(4-bromophenyl)-N-(4-butylphenyl)-N'-[4-[(4-bromophenyl)(4-butylphenyl)amino]phenyl]-N'-[4-(1-methylpropyl)phenyl]-, polymer with 2,2'-[2',3',6',7'-tetrakis(3-methylbutoxy)-9,9'-spirobi[9H-fluorene]-2,7-diyl]bis[1,3,2-dioxaborolane] (9CI) (CA INDEX NAME)

CM 1

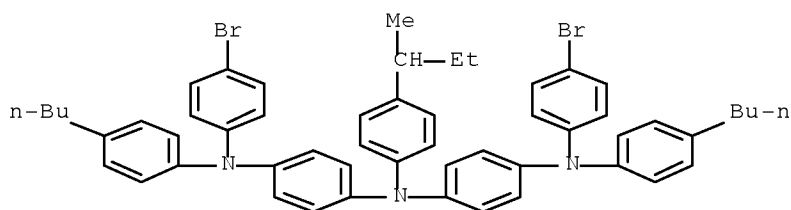
10/558,578

CRN 807374-60-3  
CMF C49 H62 B2 O8



CM 2

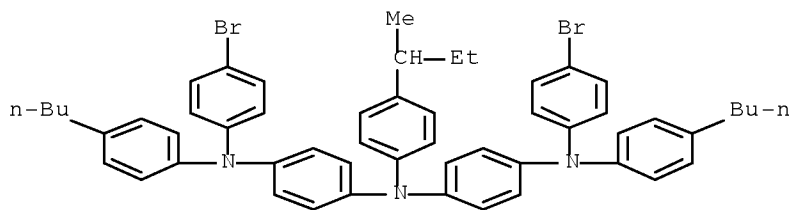
CRN 807374-46-5  
CMF C54 H55 Br2 N3



IT 807374-46-5P 807374-98-7P  
(monomer; manufacture of solution-processable semiconductive polymers with improved hole transporting properties and their use)

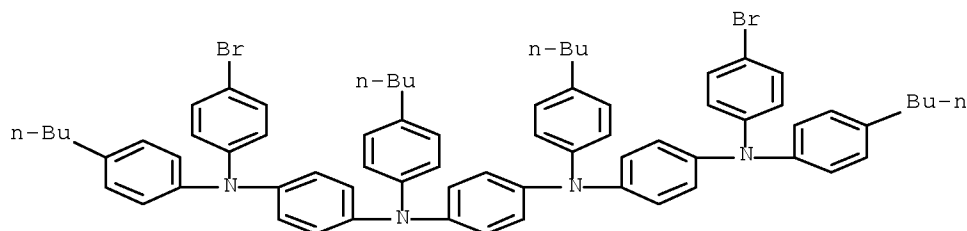
RN 807374-46-5 HCAPLUS

CN 1,4-Benzenediamine, N1-(4-bromophenyl)-N4-[4-[(4-bromophenyl)(4-butylphenyl)amino]phenyl]-N1-(4-butylphenyl)-N4-[4-(1-methylpropyl)phenyl]- (CA INDEX NAME)



RN 807374-98-7 HCAPLUS

CN 1,4-Benzenediamine, N1,N4-bis[4-[(4-bromophenyl)(4-butylphenyl)amino]phenyl]-N1,N4-bis(4-butylphenyl)- (CA INDEX NAME)



IC ICM C08G073-00  
ICS C08G061-00; C08G061-12; H01L051-00; H01L051-30  
CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 52, 73, 76  
ST Yamamoto polymn soln processable semiconductive polymer optical device; Suzuki polymn soln processable semiconductive polymer optical device; hole transporting capability semiconductive polymer manuf  
IT Conducting polymers  
Electroluminescent devices  
Optical detectors  
Optoelectronics  
Solar cells  
(manufacture of solution-processable semiconductive polymers with improved hole transporting properties and their use)  
IT 807374-47-6P 807374-61-4P 807374-75-0P  
(manufacture of solution-processable semiconductive polymers with improved hole transporting properties and their use)  
IT 807374-46-5P 807374-74-9P 807374-98-7P  
(monomer; manufacture of solution-processable semiconductive polymers with improved hole transporting properties and their use)  
REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L21 ANSWER 4 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 2003:413926 HCAPLUS Full-text  
DOCUMENT NUMBER: 138:409486  
TITLE: Light emitter for a display  
INVENTOR(S): O'Neill, Mary; Kelly, Stephen Malcolm; Contoret, Adam Edward Alexander; Richards, Gary James  
PATENT ASSIGNEE(S): University of Hull, UK  
SOURCE: U.S. Pat. Appl. Publ., 29 pp., Cont.-in-part of U.S. Ser. No. 898,518.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 2  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20030099862	A1	20030529	US 2002-187402	20020701

US 6830831 B2 20041214 <--  
 US 20030027017 A1 20030206 US 2001-898518 20010703 <--  
 US 20050040396 A1 20050224 US 2004-955135 20040930 <--  
 US 7081307 B2 20060725 <--  
 PRIORITY APPLN. INFO.: GB 2001-15984 A 20010629 <--  
 US 2001-898518 A2 20010703 <--  
 US 2002-187402 A1 20020701 <--

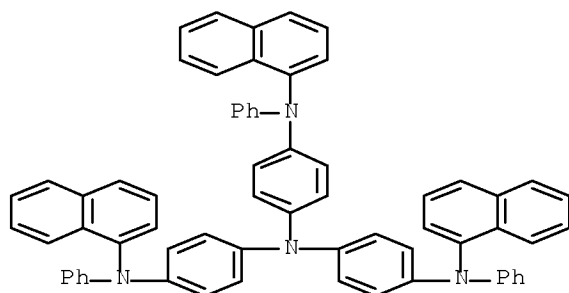
ED Entered STN: 30 May 2003

AB There is provided a light emitter for a display comprising a photoalignment layer; and photoaligned on said photoalignment layer, a light emitting polymer. Also provided are methods for forming the light emitter and the use of the light emitter in displays, backlights, electronic apparatus and security viewers.

IT 185690-39-5P  
 (hole transprot compound; light emitter for display containing photoalignment layer containing)

RN 185690-39-5 HCAPLUS

CN 1,4-Benzenediamine, N1-1-naphthalenyl-N4,N4-bis[4-(1-naphthalenylphenylamino)phenyl]-N1-phenyl- (CA INDEX NAME)



IC ICM H05B033-00

INCL 428690000; 428917000; 428001200; 428195000; 313504000; 313506000; 313112000; 257089000; 257090000; 257098000

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 35, 38

IT Electroluminescent devices

Optical imaging devices

(light emitter for display containing photoalignment layer)

IT 185690-39-5P

(hole transprot compound; light emitter for display containing photoalignment layer containing)

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

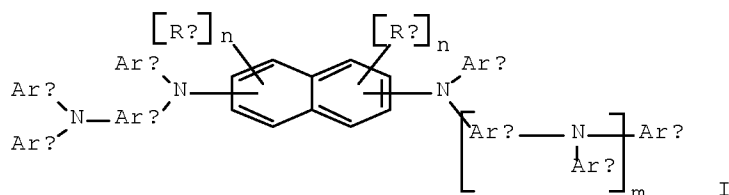
L21 ANSWER 5 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2003:259841 HCAPLUS Full-text

DOCUMENT NUMBER: 138:278192  
 TITLE: Organic electroluminescent devices with high  
 luminance employing naphthalene derivatives  
 INVENTOR(S): Parton, Richard Lee; Tang, Ching Wan  
 PATENT ASSIGNEE(S): Eastman Kodak Company, USA  
 SOURCE: Eur. Pat. Appl., 35 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1298738	A2	20030402	EP 2002-78822	20020916
EP 1298738	A3	20061227		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
US 20030129449	A1	20030710	US 2002-145363	20020514
US 6849345	B2	20050201		
PRIORITY APPLN. INFO.:			US 2001-966278	A 20010928
			US 2002-145363	A 20020514

OTHER SOURCE(S): MARPAT 138:278192  
 ED Entered STN: 04 Apr 2003  
 GI



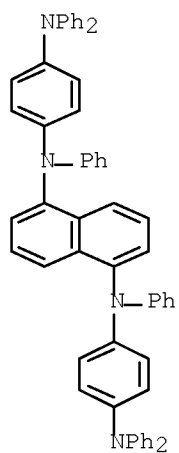
AB Multilayer electroluminescent devices are described which comprise a cathode, an anode, a light-emitting layer and a layer disposed between the cathode and anode containing a naphthalene compound represented by formula I, where m is 0, 1 or 2; each Ra is an independently selected substituent and each n is independently 0 to 3; each Ara is an independently selected aromatic group; and each Arb is an independently selected carbocyclic aromatic group; provided that 2 ring substituents may join to form a ring.

IT 503624-46-2P

(hole-injecting layer; organic electroluminescent devices with high luminance employing naphthalene derivs.)

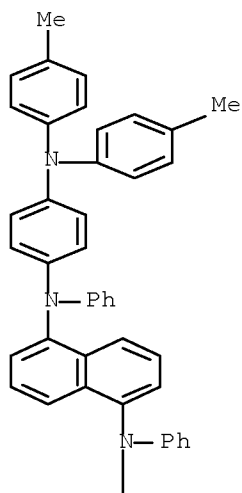
RN 503624-46-2 HCAPLUS

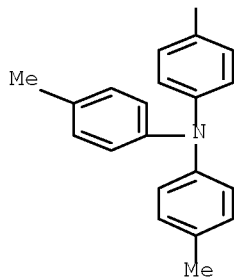
CN 1,5-Naphthalenediamine, N1,N5-bis[4-(diphenylamino)phenyl]-N1,N5-diphenyl- (CA INDEX NAME)



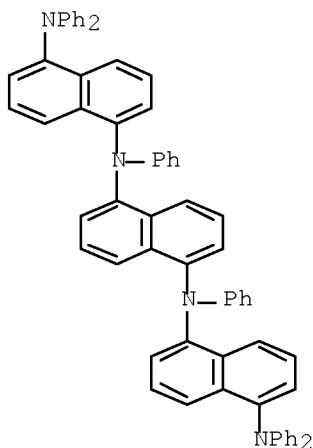
IT 503624-45-1P 503624-47-3P  
 (organic electroluminescent devices with high luminance employing  
 naphthalene derivs.)  
 RN 503624-45-1 HCAPLUS  
 CN 1,5-Naphthalenediamine, N1,N5-bis[4-[bis(4-methylphenyl)amino]phenyl]-  
 N1,N5-diphenyl- (CA INDEX NAME)

PAGE 1-A





RN 503624-47-3 HCAPLUS  
 CN 1,5-Naphthalenediamine, N1,N5-bis[5-(diphenylamino)-1-naphthalenyl]-  
 N1,N5-diphenyl- (CA INDEX NAME)



IC ICM H01L051-30  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 22, 25, 76  
 IT Electroluminescent devices  
 (organic; organic electroluminescent devices with high luminance employing naphthalene derivs.)  
 IT 503624-46-2P  
 (hole-injecting layer; organic electroluminescent devices with high luminance employing naphthalene derivs.)  
 IT 503624-45-1P 503624-47-3P  
 (organic electroluminescent devices with high luminance employing naphthalene derivs.)  
 REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L21 ANSWER 6 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2003:173090 HCAPLUS Full-text  
 DOCUMENT NUMBER: 138:197106



TITLE: Doping of a hole transporting materials for ~~semiconductor~~ devices

INVENTOR(S): Nelles, Gabriele; Yasuda, Akio; Gaering, Stephane; Schmidt, Hans-Werner; Thelakkat, Mukundan; Haridas, K. R.

PATENT ASSIGNEE(S): Sony International (Europe) G.m.b.H., Germany

SOURCE: Eur. Pat. Appl., 19 pp.  
CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1289030	A1	20030305	EP 2001-121179	20010904
<--				
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
AU 2002300570	A1	20030612	AU 2002-300570	20020815
<--				
AU 2002300570	B2	20070118		
US 20030067000	A1	20030410	US 2002-234543	20020903
<--				
US 7061009	B2	20060613		
JP 2003197942	A	20030711	JP 2002-259245	20020904
<--				
PRIORITY APPLN. INFO.:			EP 2001-121179	A 20010904
<--				

ED Entered STN: 07 Mar 2003

AB The present invention relates to a device having a solid conjugated ~~semiconductor~~ comprising a hole transport material (HTM), in which the hole transport material is mixed with oxidized hole transport material as a dopant; to a mixture which can be used as doped hole transport material; and to methods for the preparation of devices having a solid conjugated ~~semiconductor~~. The present invention also relates to a solar cell comprising such a device and to other devices made with conjugated ~~semiconductors~~, such as diodes (LEDs), transistors etc.

IT 499790-65-7P  
(radical cation salt; doping of a hole transporting materials for ~~semiconductor~~ devices)

RN 499790-65-7 HCAPLUS

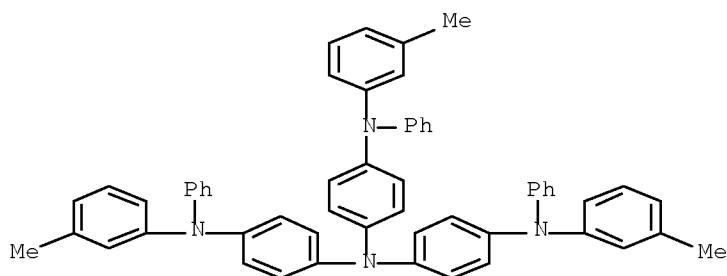
CN Antimonate(1-), hexafluoro-, (OC-6-11)-, salt with N-(3-methylphenyl)-N',N'-bis[4-[(3-methylphenyl)phenylamino]phenyl]-N-phenyl-1,4-benzenediamine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 499790-64-6

CMF C57 H48 N4

CCI RIS

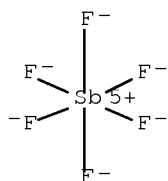


CM 2

CRN 17111-95-4

CMF F6 Sb

CCI CCS



IC ICM H01L051-40

ICS H01L051-20

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 52, 73

ST ~~semiconductor~~ device fabrication hole transport material  
doping

IT Doping

Electroluminescent devices

Hole transport

Nanoparticles

Oxidation

Porous materials

~~Semiconductor~~ device fabrication

Solar cells

Transistors

(doping of a hole transporting materials for ~~semiconductor~~  
devices)

IT Transition metal complexes

(ruthenium dye; doping of a hole transporting materials for  
~~semiconductor~~ devices)

IT Dyes

(~~semiconductor~~ material sensitizer; doping of a hole  
transporting materials for ~~semiconductor~~ devices)

IT 499790-63-5DP, solid solns. with tris(ethylhexyl)oxy analog

499790-67-9DP, solid solns. with tris(hexyl)oxy analog

(TDAB BF4- radical cation salt; doping of a hole transporting  
materials for ~~semiconductor~~ devices)

IT 124729-98-2 377735-40-5 377735-41-6

(hole transport material; doping of a hole transporting materials for ~~semiconductor~~ devices)

IT 14635-75-7, Nitrosonium tetrafluoroborate 26042-64-8, Silver hexafluoroantimonate  
(oxidizing agent; doping of a hole transporting materials for ~~semiconductor~~ devices)

IT 499790-60-2P 499790-61-3P ~~499790-65-7P~~  
(radical cation salt; doping of a hole transporting materials for ~~semiconductor~~ devices)

IT 207739-72-8  
(spiro-MeO-TAD, hole transport material; doping of a hole transporting materials for ~~semiconductor~~ devices)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L21 ANSWER 7 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2003:143381 HCAPLUS Full-text

DOCUMENT NUMBER: 138:187508

TITLE: Preparation of aromatic diamines by dimerization of aromatic halides

INVENTOR(S): Kawamura, Hisayuki; Moriwaki, Fumio

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.  
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 2003055320	A	20030226	JP 2001-247018	20010816
			<--	
CN 1521160	A	20040818	CN 2003-103880	20030214
			<--	
CN 100410232	C	20080813		
PRIORITY APPLN. INFO.:			JP 2001-247018	A 20010816
			<--	

OTHER SOURCE(S): MARPAT 138:187508

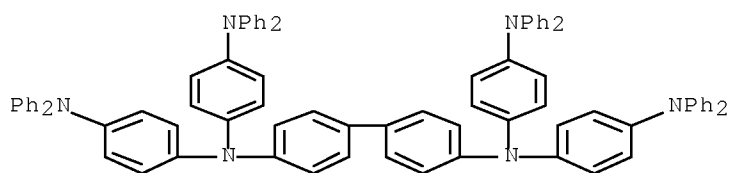
ED Entered STN: 26 Feb 2003

AB Ar1Ar2NAr3Ar3NAr1Ar2 [Ar1, Ar2 = (un)substituted 5- to 30-membered monovalent aromatic group; Ar3 = (un)substituted 5- to 30-membered divalent aromatic group; X = halo], useful as materials for heat-resistant electroluminescent devices and charge-transfer agents for electrophotog. photoreceptors, are prepared by dimerization of Ar1Ar2NAr3X (Ar1-Ar3 = same as above; X = halo). Thus, NiCl<sub>2</sub> was treated with Ph<sub>3</sub>P, Zn powder, and KI at 70-80° in vacuo, mixed with THF, and treated with N,N-di(4-diphenyl)-4-bromoaniline/THF at 65-70° for 10 h to give 64% N,N,N',N'-tetrakis(4-diphenyl)-4,4'-benzidine, vs. 3%, when prepared from N,N'-bis(4-diphenyl)-4,4'-benzidine and 4-iodobiphenyl.

IT ~~214338-27-9P~~  
(preparation of aromatic diamines as materials for charge-transfer agents and electroluminescent devices with transition metal complexes as dimerization catalysts)

RN 214338-27-9 HCAPLUS

CN [1,1'-Biphenyl]-4,4'-diamine, N4,N4,N4',N4'-tetrakis[4-(diphenylamino)phenyl]- (CA INDEX NAME)

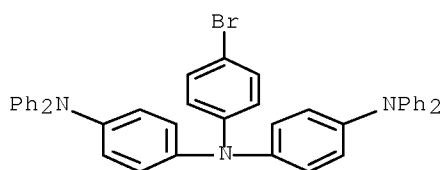


IT 499128-72-2P

(preparation of aromatic diamines as materials for charge-transfer agents and electroluminescent devices with transition metal complexes as dimerization catalysts)

RN 499128-72-2 HCAPLUS

CN 1,4-Benzenediamine, N1-(4-bromophenyl)-N1-[4-(diphenylamino)phenyl]-N4,N4-diphenyl- (CA INDEX NAME)



IC ICM C07C209-68

ICS C07C211-54; C07C211-58; C07D207-34; C07D213-74; C07D215-38; C07D271-10; C07D307-66; C07B061-00

CC 25-4 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)  
Section cross-reference(s): 73, 74

IT Electrophotographic photoconductors (photoreceptors)

(charge-transfer agents for; preparation of aromatic diamines as materials for charge-transfer agents and electroluminescent devices with transition metal complexes as dimerization catalysts)

IT Dimerization catalysts

Electroluminescent devices

(preparation of aromatic diamines as materials for charge-transfer agents and electroluminescent devices with transition metal complexes as dimerization catalysts)

IT 145898-89-1P 164724-35-0P 194727-77-0P 214338-27-9P

(preparation of aromatic diamines as materials for charge-transfer agents and electroluminescent devices with transition metal complexes as dimerization catalysts)

IT 1591-31-7P, 4-Iodobiphenyl 29325-58-4P 38257-52-2P,  
4-Iodotriphenylamine 54446-36-5P, 4-Bromodiphenylamine  
138310-84-6P 202831-65-0P 499128-71-1P 499128-72-2P

(preparation of aromatic diamines as materials for charge-transfer agents and electroluminescent devices with transition metal complexes as dimerization catalysts)

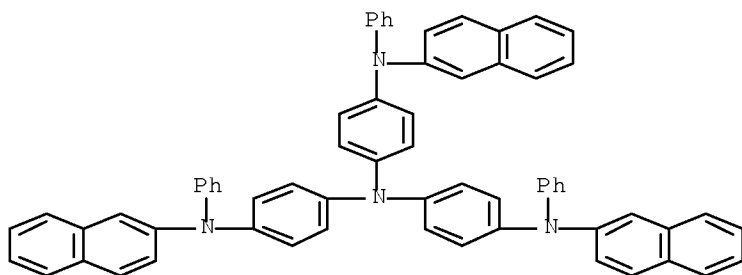
L21 ANSWER 8 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2003:90473 HCAPLUS Full-text

DOCUMENT NUMBER: 138:360132

TITLE: The effect of annealing of organic thin films on charge injection in organic electroluminescent

devices  
 AUTHOR(S): Ishihara, Mari; Okumoto, Kenji; Shirota, Yasuhiko  
 CORPORATE SOURCE: Department of Applied Chemistry, Faculty of  
 Engineering, Osaka University, Osaka, 565-0871,  
 Japan  
 SOURCE: Journal of Photopolymer Science and Technology ( 2002), 15(5), 769-773  
 CODEN: JSTEED; ISSN: 0914-9244  
 PUBLISHER: Technical Association of Photopolymers, Japan  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 ED Entered STN: 06 Feb 2003  
 AB The effect of annealing of organic thin films on charge injection in the tris(8-quinolinolato)aluminum (Alq3)-based organic electroluminescent (EL) devices was investigated. The external quantum and luminous efficiencies were found to improve by annealing. The investigation of the effect of annealing on charge injection in hole-only and electron-only devices has revealed that while hole injection from the ITO electrode into the hole-transport layer is not affected by the annealing, electron injection from the MgAg electrode into the Alq3 layer is enhanced by the annealing. It is concluded that improved charge balance due to the enhanced electron injection by the annealing is responsible for the improvement of the performance of the organic EL device.  
 IT 185690-41-9P, 4,4',4''-Tris[2-naphthyl(phenyl)amino]triphenylamine  
 (effect of annealing of organic thin films on charge injection in organic electroluminescent devices)  
 RN 185690-41-9 HCAPLUS  
 CN 1,4-Benzenediamine, N1-2-naphthalenyl-N4,N4-bis[4-(2-naphthalenylphenylamino)phenyl]-N1-phenyl- (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 22, 72, 76  
 IT Electroluminescent devices  
 (thin-film; effect of annealing of organic thin films on charge injection in organic electroluminescent devices)  
 IT 134008-76-7P 185690-41-9P,  
 4,4',4''-Tris[2-naphthyl(phenyl)amino]triphenylamine  
 (effect of annealing of organic thin films on charge injection in organic electroluminescent devices)  
 REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L21 ANSWER 9 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2001:823339 HCAPLUS Full-text  
 DOCUMENT NUMBER: 135:364478  
 TITLE: Preparation of triphenylamine derivatives as  
 electronic materials from bisarylamines  
 INVENTOR(S): Miki, Tetsuzo; Nakanishi, Naoko; Kimura,  
 Toshihide; Komatsu, Shihoko  
 PATENT ASSIGNEE(S): Hodogaya Chemical Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001316336	A	20011113	JP 2001-49695	20010226
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PRIORITY APPLN. INFO.:			JP 2000-48519	A 20000225
			<--	

ED Entered STN: 13 Nov 2001

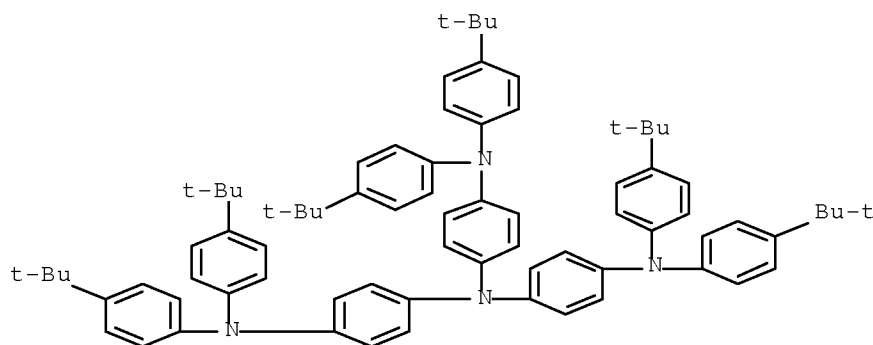
AB Environmentally-stable electronic materials, e.g. carrier transport materials,  
 charge transport materials for electrophotog. photoreceptors, etc., having  
 triphenylamine dimer or trimer structure are prepared from bisarylamines as  
 rubber and plastic additives and aryl halides with 1 step. Similar electronic  
 materials having triphenylamine tetramer structure are prepared from  
 bisarylamines and aryl halides with 2 steps.

IT 173314-13-1P 209165-07-1P

(preparation of triphenylamine derivs. as electronic materials from  
bisarylamines and aryl halides)

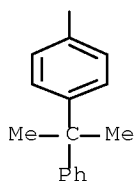
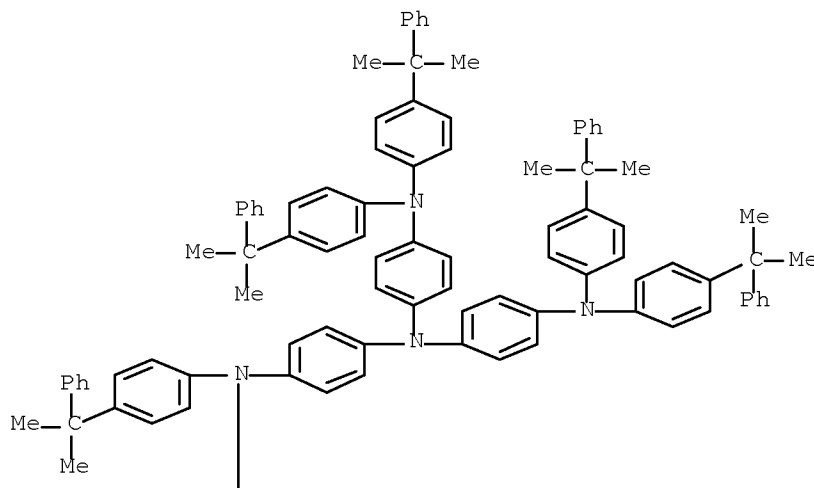
RN 173314-13-1 HCAPLUS

CN 1,4-Benzenediamine, N1,N1-bis[4-[bis[4-(1,1-  
 dimethylethyl)phenyl]amino]phenyl]-N4,N4-bis[4-(1,1-  
 dimethylethyl)phenyl]- (CA INDEX NAME)



RN 209165-07-1 HCAPLUS

CN 1,4-Benzenediamine, N,N-bis[4-[bis[4-(1-methyl-1-  
 phenylethyl)phenyl]amino]phenyl]-N',N'-bis[4-(1-methyl-1-  
 phenylethyl)phenyl]- (9CI) (CA INDEX NAME)



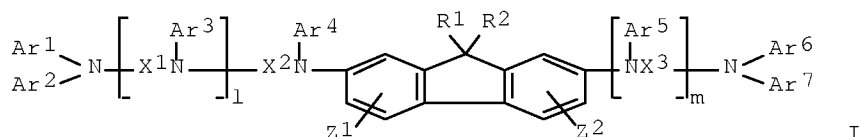
IC ICM C07C209-10  
 ICS C07C211-54; C08K005-18; C08L021-00; C08L101-00; H05B033-14;  
 H05B033-22; C09K011-06; G03G005-00; G03G005-06  
 CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other  
 Reprographic Processes)  
 Section cross-reference(s): 25  
 IT Electrophotographic photoconductors (photoreceptors)  
 (charge transport materials; preparation of triphenylamine derivs. as  
 electronic materials from bisarylamines and aryl halides)  
 IT Electroluminescent devices  
 (organic; preparation of triphenylamine derivs. as electronic materials  
 from bisarylamines and aryl halides)  
 IT 167218-45-3P 173314-13-1P 209165-07-1P  
 248589-66-4P 372963-05-8P  
 (preparation of triphenylamine derivs. as electronic materials from  
 bisarylamines and aryl halides)

L21 ANSWER 10 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2001:603530 HCAPLUS Full-text  
 DOCUMENT NUMBER: 135:187795  
 TITLE: New amine compound for organic electroluminescent  
 device showing longer luminescent lifetime and  
 excellent durability

INVENTOR(S): Shimamura, Takehiko; Nakatsuka, Masakatsu; Ishida, Tsutomu  
 PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 75 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001226331	A	20010821	JP 2000-34477	20000214
			<--	
JP 4220644	B2	20090204		
PRIORITY APPLN. INFO.:			JP 2000-34477	20000214
			<--	

OTHER SOURCE(S): MARPAT 135:187795  
 ED Entered STN: 21 Aug 2001  
 GI



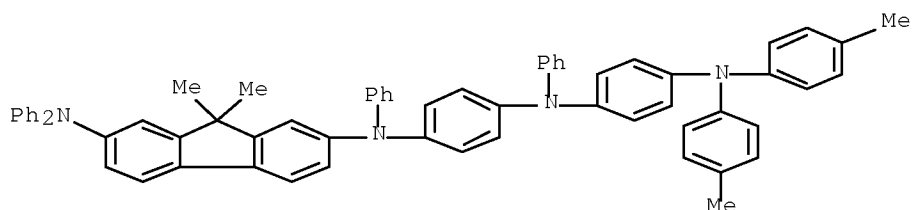
AB The new amine compound is represented by a general formula I (Ar1-7 = aryl; R1, R2 = H, alkyl, aryl, aralkyl; Z1, Z2 = H, halo, alkyl, alkoxy, aryl; X1-3 = arylene; l, m = 0, 1) and synthesized. The amine compound is suitable as a pos. hole injection transport material in an organic electroluminescent display device.

IT 354987-31-8P 354987-32-9P 354987-36-3P  
 354987-39-6P 354987-42-1P 354987-43-2P  
 354987-47-6P 354987-50-1P 354987-55-6P  
 354987-58-9P 354987-62-5P 354987-71-6P

(amine compound for organic electroluminescent device showing longer luminescent lifetime and excellent durability)

RN 354987-31-8 HCAPLUS

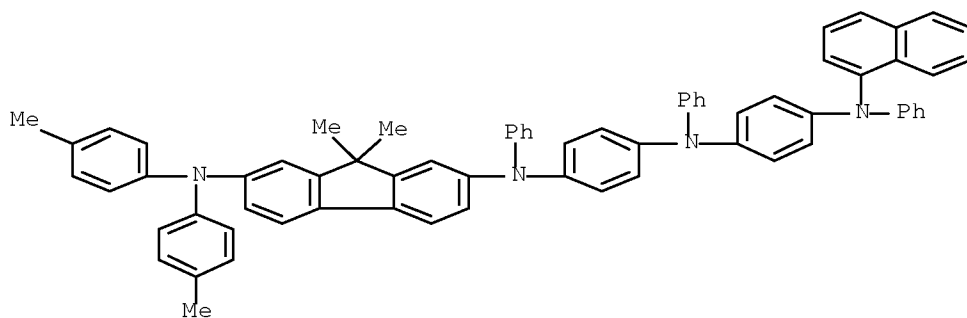
CN 9H-Fluorene-2,7-diamine, N2-[4-[[4-[bis(4-methylphenyl)amino]phenyl]phenylamino]phenyl]-9,9-dimethyl-N2,N7,N7-triphenyl- (CA INDEX NAME)





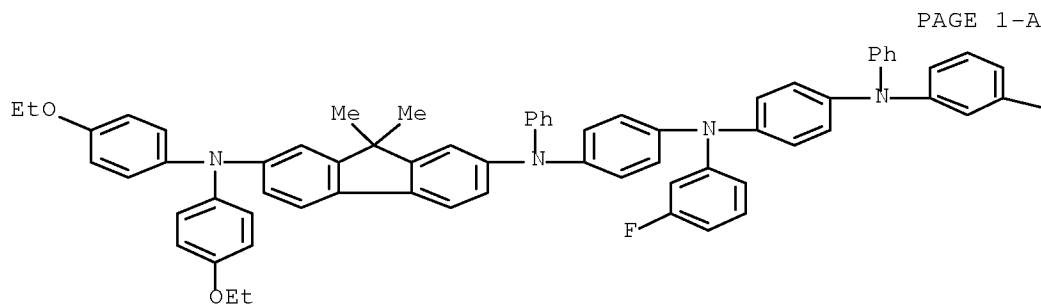
RN 354987-32-9 HCAPLUS

CN 9H-Fluorene-2,7-diamine, 9,9-dimethyl-N2,N2-bis(4-methylphenyl)-N7-[4-  
[[4-(1-naphthalenylphenylamino)phenyl]phenylamino]phenyl]-N7-phenyl-  
(CA INDEX NAME)



RN 354987-36-3 HCAPLUS

CN 9H-Fluorene-2,7-diamine, N2,N2-bis(4-ethoxyphenyl)-N7-[4-[(3-  
fluorophenyl)[4-[(3-fluorophenyl)phenylamino]phenyl]amino]phenyl]-9,9-  
dimethyl-N7-phenyl- (CA INDEX NAME)



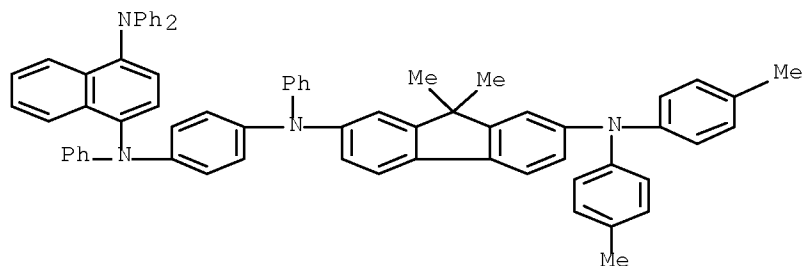
PAGE 1-A

PAGE 1-B

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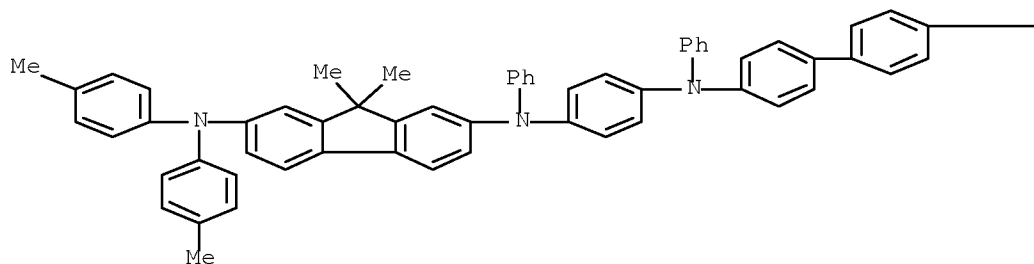
RN 354987-39-6 HCAPLUS

CN 9H-Fluorene-2,7-diamine, N2-[4-[[4-(diphenylamino)-1-  
naphthalenyl]phenylamino]phenyl]-9,9-dimethyl-N7,N7-bis(4-  
methylphenyl)-N2-phenyl- (CA INDEX NAME)

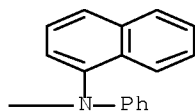


RN 354987-42-1 HCAPLUS  
 CN 9H-Fluorene-2,7-diamine, 9,9-dimethyl-N2,N2-bis(4-methylphenyl)-N7-[4-  
 [[4'-(1-naphthalenylphenylamino)[1,1'-biphenyl]-4-yl]phenylamino]phenyl]-N7-phenyl- (CA INDEX NAME)

PAGE 1-A

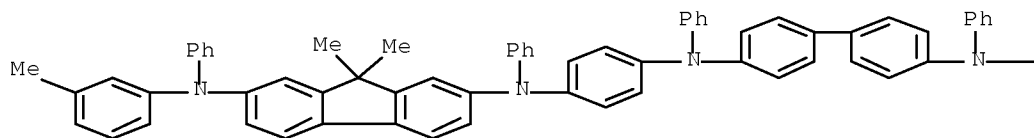


PAGE 1-B

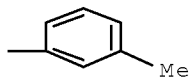


RN 354987-43-2 HCAPLUS  
 CN 9H-Fluorene-2,7-diamine, 9,9-dimethyl-N2-(3-methylphenyl)-N7-[4-[[4'-  
 [(3-methylphenyl)phenylamino][1,1'-biphenyl]-4-yl]phenylamino]phenyl]-  
 N2,N7-diphenyl- (CA INDEX NAME)

PAGE 1-A



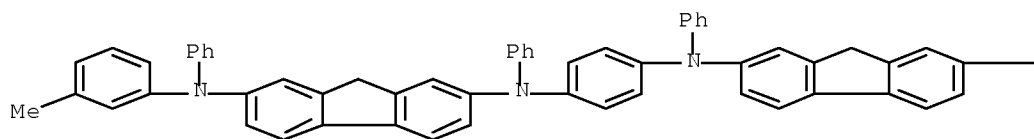
PAGE 1-B



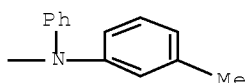
RN 354987-47-6 HCAPLUS

CN 9H-Fluorene-2,7-diamine, N,N''-1,4-phenylenebis[N'-(3-methylphenyl)-N,N'-diphenyl- (9CI) (CA INDEX NAME)

PAGE 1-A



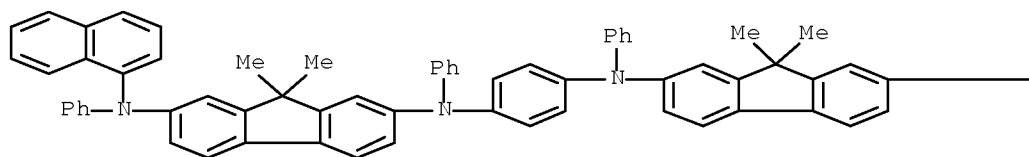
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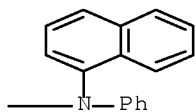


RN 354987-50-1 HCAPLUS

CN 9H-Fluorene-2,7-diamine, N,N''-1,4-phenylenebis[9,9-dimethyl-N'-1-naphthalenyl-N,N'-diphenyl- (9CI) (CA INDEX NAME)

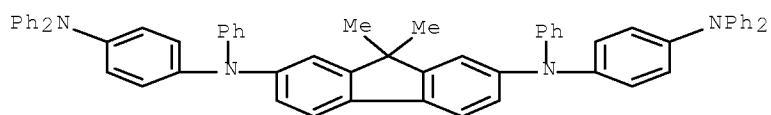
PAGE 1-A





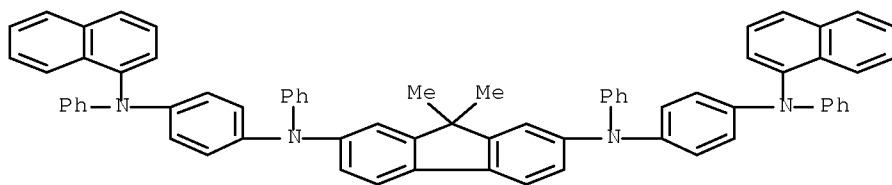
RN 354987-55-6 HCAPLUS

CN 9H-Fluorene-2,7-diamine, N2,N7-bis[4-(diphenylamino)phenyl]-9,9-dimethyl-N2,N7-diphenyl- (CA INDEX NAME)



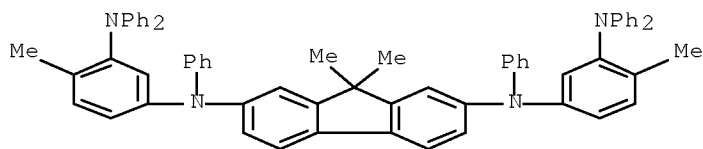
RN 354987-58-9 HCAPLUS

CN 9H-Fluorene-2,7-diamine, 9,9-dimethyl-N2,N7-bis[4-(1-naphthalenylphenylamino)phenyl]-N2,N7-diphenyl- (CA INDEX NAME)



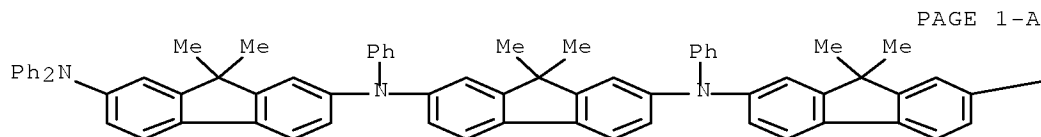
RN 354987-62-5 HCAPLUS

CN 9H-Fluorene-2,7-diamine, N2,N7-bis[3-(diphenylamino)-4-methylphenyl]-9,9-dimethyl-N2,N7-diphenyl- (CA INDEX NAME)



RN 354987-71-6 HCAPLUS

CN 9H-Fluorene-2,7-diamine, N2,N7-bis[7-(diphenylamino)-9,9-dimethyl-9H-fluorene-2-yl]-9,9-dimethyl-N2,N7-diphenyl- (CA INDEX NAME)



PAGE 1-B

—NPh<sub>2</sub>

IC ICM C07C211-61  
 ICS C07C217-94; C07D209-86; C07D213-74; C07D265-38; C07D279-26;  
 C07D333-36; C09K011-06; H05B033-14; H05B033-22  
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other  
 Reprographic Processes)  
 Section cross-reference(s): 73  
 IT Electroluminescent devices  
 (amine compound for organic electroluminescent device showing longer  
 luminescent lifetime and excellent durability)  
 IT 354987-31-8P 354987-32-9P 354987-36-3P  
 354987-39-6P 354987-42-1P 354987-43-2P  
 354987-46-5P 354987-47-6P 354987-50-1P  
 354987-52-3P 354987-55-6P 354987-58-9P  
 354987-62-5P 354987-67-0P 354987-71-6P  
 (amine compound for organic electroluminescent device showing longer  
 luminescent lifetime and excellent durability)

L21 ANSWER 11 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2001:269316 HCAPLUS Full-text

DOCUMENT NUMBER: 134:303134

TITLE: Aryl amine containing heterocyclic rings for  
organic electroluminescent deviceINVENTOR(S): Kido, Junji; Uchishiro, Tsuyoshi; Ichiyanagi,  
Toshiyuki

PATENT ASSIGNEE(S): Chemipro Kasei K. K., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 35 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

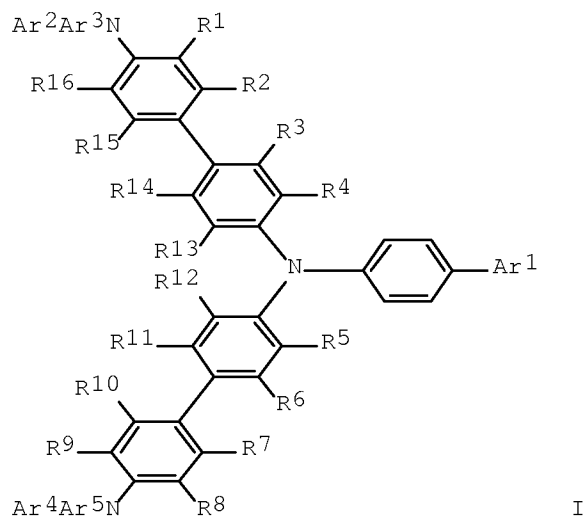
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2001106678	A	20010417	JP 1999-283470	19991004
			<--	
PRIORITY APPLN. INFO.:			JP 1999-283470	19991004
			<--	

OTHER SOURCE(S): MARPAT 134:303134

ED Entered STN: 17 Apr 2001

GI

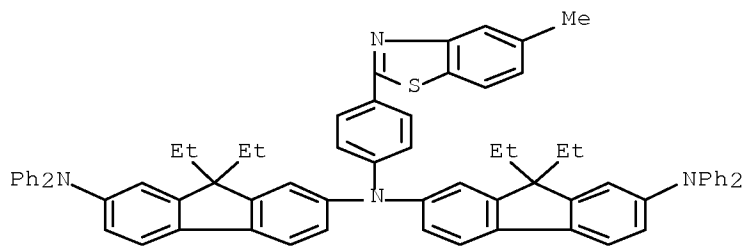


AB The title aryl amine has structure I ( Ar1 = heterocyclics; R1-16 = H, amino, alkyl, alkoxy, aryl; Ar2-5 = aryl) and  $\geq 750$  mol. weight The aryl amine has a relatively large mol. weight and provides the EL device of the excellence in the luminescent efficiency, coatability, durability, and storageability.

IT 334698-21-4P  
(aryl amine containing heterocyclic rings for organic electroluminescent device)

RN 334698-21-4 HCAPLUS

CN 9H-Fluorene-2,7-diamine, N2-[7-(diphenylamino)-9,9-diethyl-9H-fluorene-2-yl]-9,9-diethyl-N2-[4-(5-methyl-2-benzothiazolyl)phenyl]-N7,N7-diphenyl- (CA INDEX NAME)



IC ICM C07D277-66  
ICS C07D317-00; C07D417-14; H05B033-14; H05B033-22

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 28

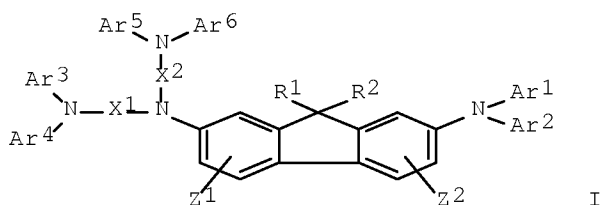
IT **Electroluminescent devices**  
(aryl amine containing heterocyclic rings for organic electroluminescent

device)  
 IT Electroluminescent devices  
 (panels; aryl amine containing heterocyclic rings for organic  
 electroluminescent device)  
 IT 334698-17-8P 334698-18-9P 334698-20-3P ~~334698-21-4P~~  
 (aryl amine containing heterocyclic rings for organic electroluminescent  
 device)

L21 ANSWER 12 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2000:833279 HCAPLUS Full-text  
 DOCUMENT NUMBER: 134:23332  
 TITLE: Preparation of  
 2-(diarylamino)-7-bis[(di(arylamino)aryl)amino]flu  
 orene derivatives as hole transport materials for  
 organic electroluminescent devices  
 INVENTOR(S): Nakatsuka, Masakatsu; Shimamura, Takehiko  
 PATENT ASSIGNEE(S): Mitsui Chemical Industry Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 59 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000327640	A	20001128	JP 1999-145130	19990525
			<--	
JP 4216949	B2	20090128		
PRIORITY APPLN. INFO.:			JP 1999-145130	19990525
			<--	

OTHER SOURCE(S): MARPAT 134:23332  
 ED Entered STN: 29 Nov 2000  
 GI



AB The title compds. [I; Ar1 - Ar6 = (un)substituted aryl; NAr1Ar2, NAr3Ar4, or NAr5Ar6 forms N-containing heterocyclcyl; R1, R2 = H, linear or branched alkyl, (un)substituted aryl or aralkyl; Z1, Z2 = H, halo, linear or branched alkyl or alkoxy, (un)substituted aryl; X1, X2 = (un)substituted arylene] are prepared Thus, 2-[N,N-bis(4-methylphenyl)amino]-9,9-dimethyl-9H-7-iodofluorene 10.3, N,N-bis[4-(diphenylamino)phenyl]amine 10, Cu powder 10, and K2CO3 20 g were refluxed in o-dichlorobenzene at 190° for 8 h to give 2-[bis(4-methylphenyl)amino]-9,9-dimethyl-7-[bis(4-(diphenylamino)phenyl)amino]fluorene (II) which was purified by sublimation at

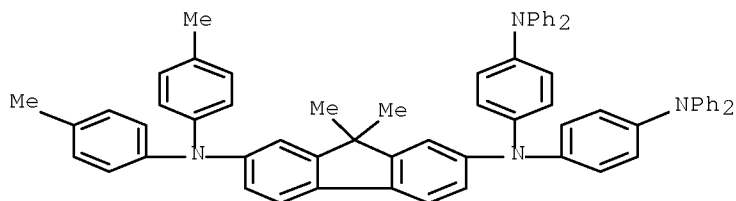
350° and 10<sup>-6</sup> torr. An organic electroluminescent device with a hole transport layer of II, an electron transport layer of aluminum tris(8-quinolinolate), and a Ag/Mg cathode electrode vapor-deposited on an ITO transparent substrate exhibited green luminescence with brilliance of 580 cd/cm<sup>2</sup> at 50°, 6.5 V, and 10 mA/cm<sup>2</sup>.

IT 228706-59-0P 228706-60-3P 228706-63-6P  
 228706-66-9P 228706-68-1P 228706-73-8P  
 228706-84-1P 309715-70-6P 309715-71-7P  
 309715-76-2P 309715-79-5P 309715-84-2P  
 309715-89-7P 309715-91-1P 309715-93-3P  
 309715-95-5P 309715-97-7P 309715-98-8P  
 309716-00-5P 309716-08-3P

(preparation of (diarylamino)[((arylamino)aryl)amino]fluorene derivs. as hole transport materials for organic electroluminescent devices)

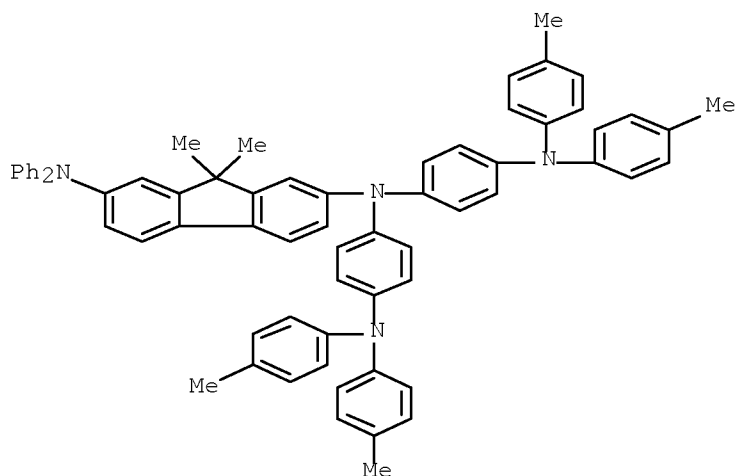
RN 228706-59-0 HCAPLUS

CN 9H-Fluorene-2,7-diamine, N2,N2-bis[4-(diphenylamino)phenyl]-9,9-dimethyl-N7,N7-bis(4-methylphenyl)- (CA INDEX NAME)



RN 228706-60-3 HCAPLUS

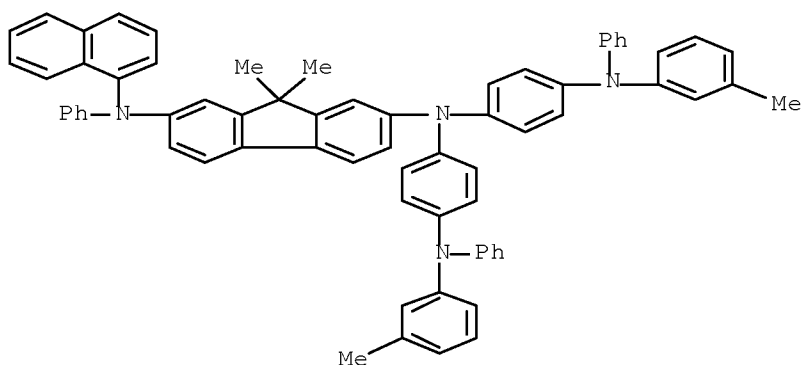
CN 9H-Fluorene-2,7-diamine, N2,N2-bis[4-[bis(4-methylphenyl)amino]phenyl]-9,9-dimethyl-N7,N7-diphenyl- (CA INDEX NAME)



RN 228706-63-6 HCAPLUS

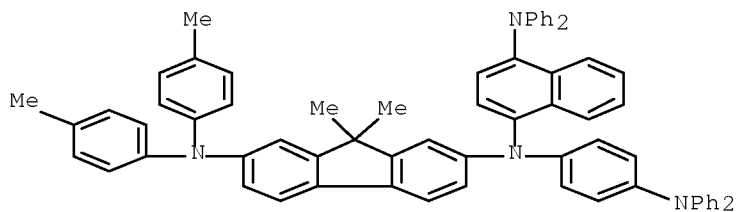
CN 9H-Fluorene-2,7-diamine, 9,9-dimethyl-N2,N2-bis[4-[(3-methylphenyl)phenylamino]phenyl]-N7-1-naphthalenyl-N7-phenyl- (CA INDEX NAME)





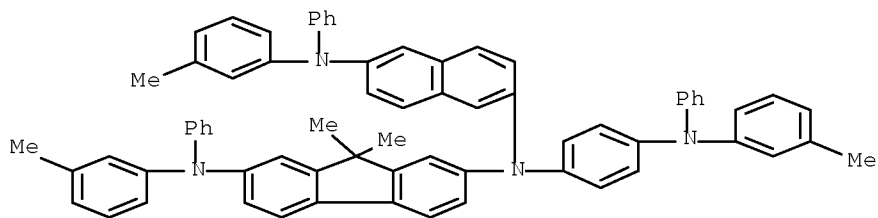
RN 228706-66-9 HCAPLUS

CN 9H-Fluorene-2,7-diamine, N2-[4-(diphenylamino)-1-naphthalenyl]-N2-[4-(diphenylamino)phenyl]-9,9-dimethyl-N7,N7-bis(4-methylphenyl)- (CA INDEX NAME)



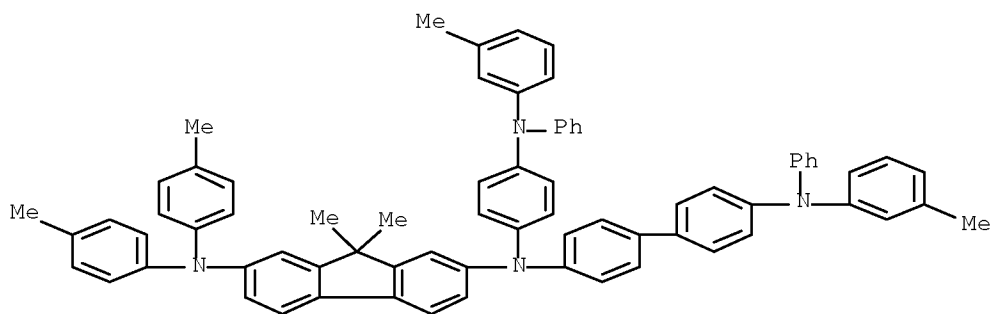
RN 228706-68-1 HCAPLUS

CN 9H-Fluorene-2,7-diamine, 9,9-dimethyl-N2-(3-methylphenyl)-N7-[6-[(3-methylphenyl)phenylamino]-2-naphthalenyl]-N7-[4-[(3-methylphenyl)phenylamino]phenyl]-N2-phenyl- (CA INDEX NAME)



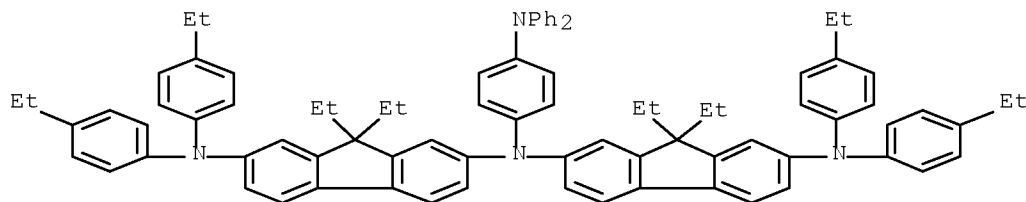
RN 228706-73-8 HCAPLUS

CN 9H-Fluorene-2,7-diamine, 9,9-dimethyl-N2,N2-bis(4-methylphenyl)-N7-[4'-[(3-methylphenyl)phenylamino][1,1'-biphenyl]-4-yl]-N7-[4-[(3-methylphenyl)phenylamino]phenyl]- (CA INDEX NAME)



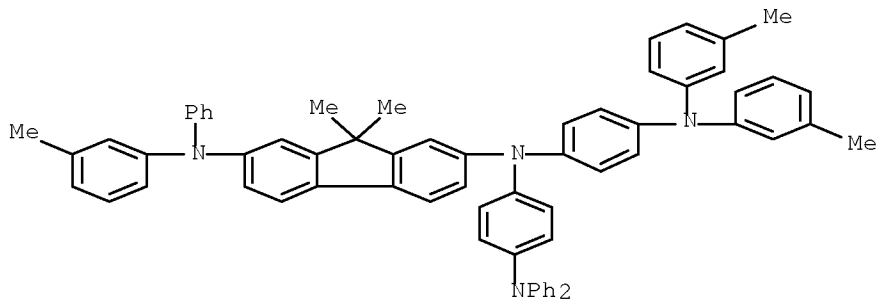
RN 228706-84-1 HCAPLUS

CN 9H-Fluorene-2,7-diamine, N2-[7-[bis(4-ethylphenyl)amino]-9,9-diethyl-9H-fluorene-2-yl]-N2-[4-(diphenylamino)phenyl]-9,9-diethyl-N7,N7-bis(4-ethylphenyl)- (CA INDEX NAME)



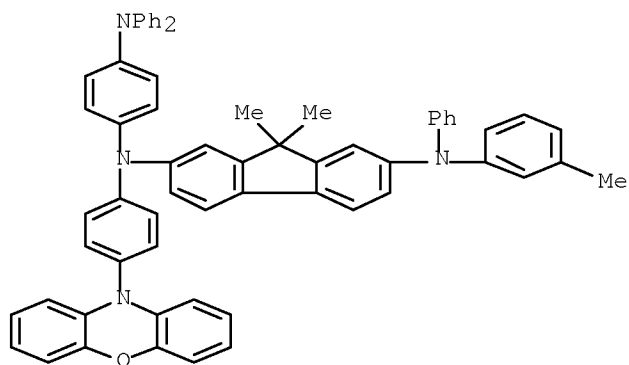
RN 309715-70-6 HCAPLUS

CN 9H-Fluorene-2,7-diamine, N2-[4-[bis(3-methylphenyl)amino]phenyl]-N2-[4-(diphenylamino)phenyl]-9,9-dimethyl-N7-(3-methylphenyl)-N7-phenyl- (CA INDEX NAME)



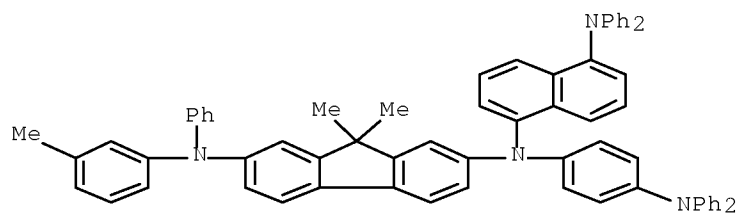
RN 309715-71-7 HCAPLUS

CN 9H-Fluorene-2,7-diamine, N2-[4-(diphenylamino)phenyl]-9,9-dimethyl-N7-(3-methylphenyl)-N2-[4-(10H-phenoxazin-10-yl)phenyl]-N7-phenyl- (CA INDEX NAME)



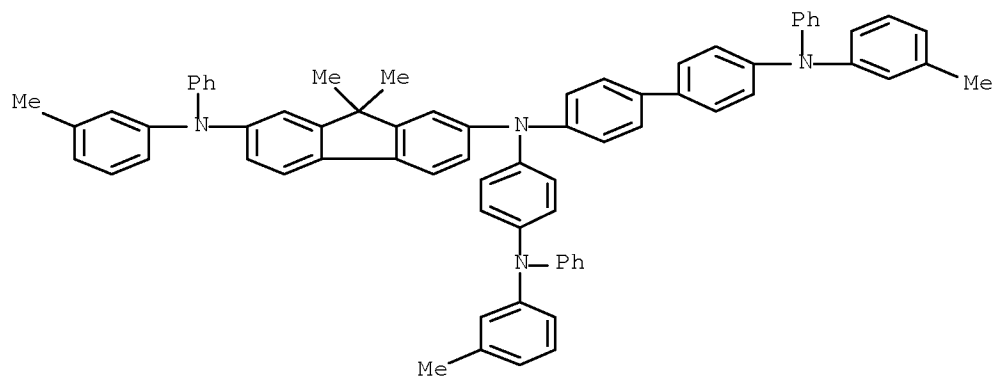
RN 309715-76-2 HCAPLUS

CN 9H-Fluorene-2,7-diamine, N2-[5-(diphenylamino)-1-naphthalenyl]-N2-[4-(diphenylamino)phenyl]-9,9-dimethyl-N7-(3-methylphenyl)-N7-phenyl- (CA INDEX NAME)



RN 309715-79-5 HCAPLUS

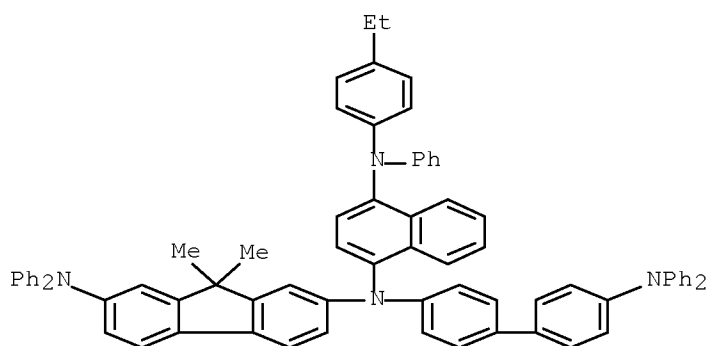
CN 9H-Fluorene-2,7-diamine, 9,9-dimethyl-N2-(3-methylphenyl)-N7-[4'-[(3-methylphenyl)phenylamino][1,1'-biphenyl]-4-yl]-N7-[4-[(3-methylphenyl)phenylamino]phenyl]-N2-phenyl- (CA INDEX NAME)



RN 309715-84-2 HCAPLUS

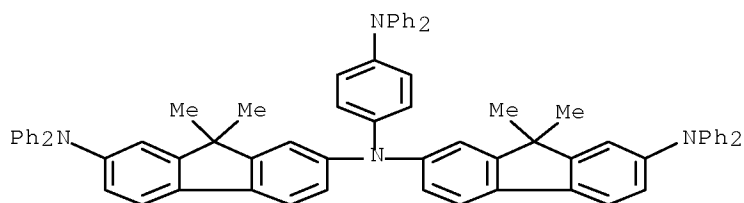
CN 9H-Fluorene-2,7-diamine, N2-[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-N2-[4-[(4-ethylphenyl)phenylamino]-1-naphthalenyl]-9,9-dimethyl-N7,N7-

diphenyl- (CA INDEX NAME)



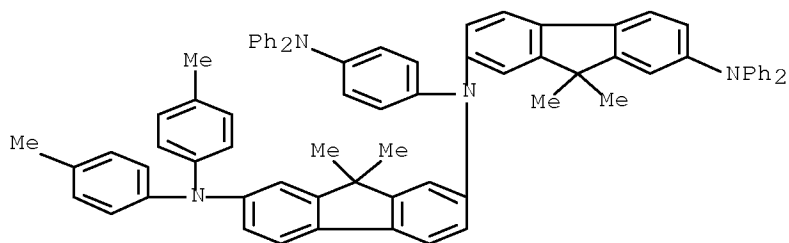
RN 309715-89-7 HCAPLUS

CN 9H-Fluorene-2,7-diamine, N2-[7-(diphenylamino)-9,9-dimethyl-9H-fluoren-2-yl]-N2-[4-(diphenylamino)phenyl]-9,9-dimethyl-N7,N7-diphenyl- (CA INDEX NAME)



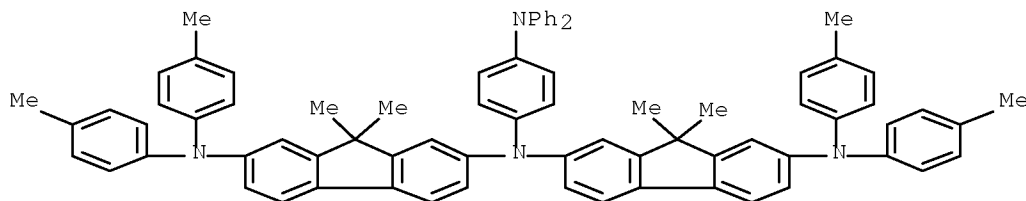
RN 309715-91-1 HCAPLUS

CN 9H-Fluorene-2,7-diamine, N2-[7-[bis(4-methylphenyl)amino]-9,9-dimethyl-9H-fluoren-2-yl]-N2-[4-(diphenylamino)phenyl]-9,9-dimethyl-N7,N7-diphenyl- (CA INDEX NAME)



RN 309715-93-3 HCAPLUS

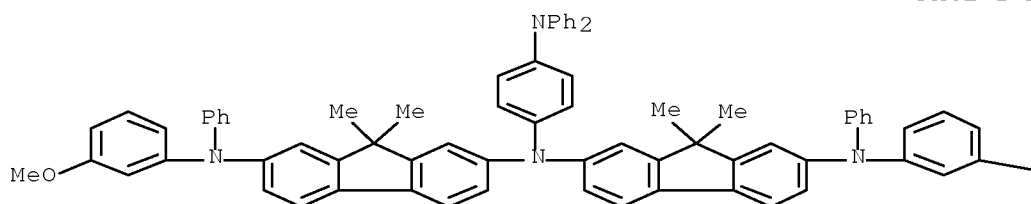
CN 9H-Fluorene-2,7-diamine, N2-[7-[bis(4-methylphenyl)amino]-9,9-dimethyl-9H-fluoren-2-yl]-N2-[4-(diphenylamino)phenyl]-9,9-dimethyl-N7,N7-bis(4-methylphenyl)- (CA INDEX NAME)



RN 309715-95-5 HCAPLUS

CN 9H-Fluorene-2,7-diamine, N2-[4-(diphenylamino)phenyl]-N7-(3-methoxyphenyl)-N2-[7-[(3-methoxyphenyl)phenylamino]-9,9-dimethyl-9H-fluoren-2-yl]-9,9-dimethyl-N7-phenyl- (CA INDEX NAME)

PAGE 1-A

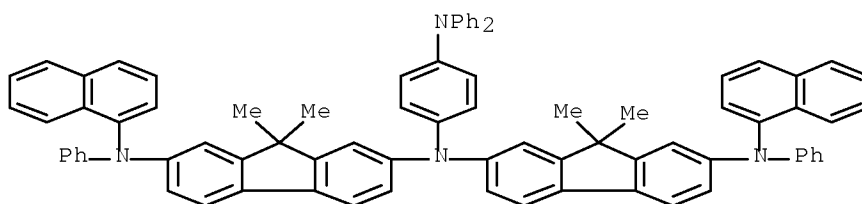


PAGE 1-B

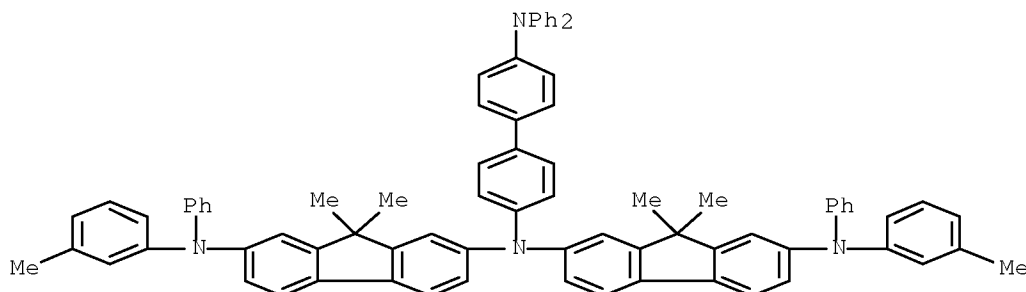
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RN 309715-97-7 HCAPLUS

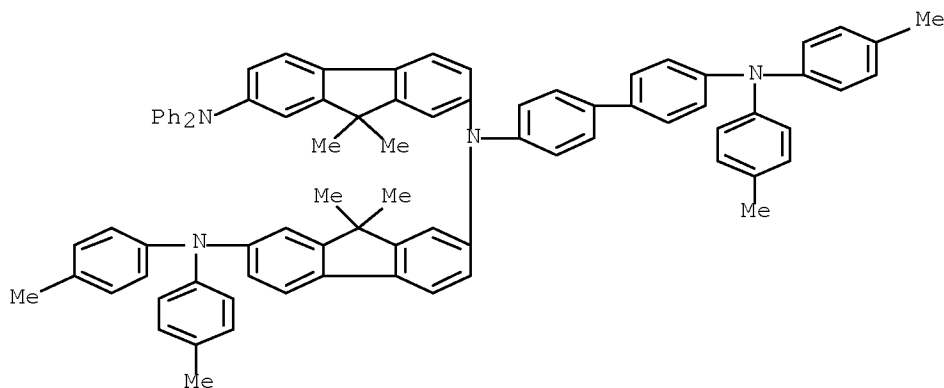
CN 9H-Fluorene-2,7-diamine, N2-[9,9-dimethyl-7-(1-naphthalenylphenylamino)-9H-fluoren-2-yl]-N2-[4-(diphenylamino)phenyl]-9,9-dimethyl-N7-1-naphthalenyl-N7-phenyl- (CA INDEX NAME)



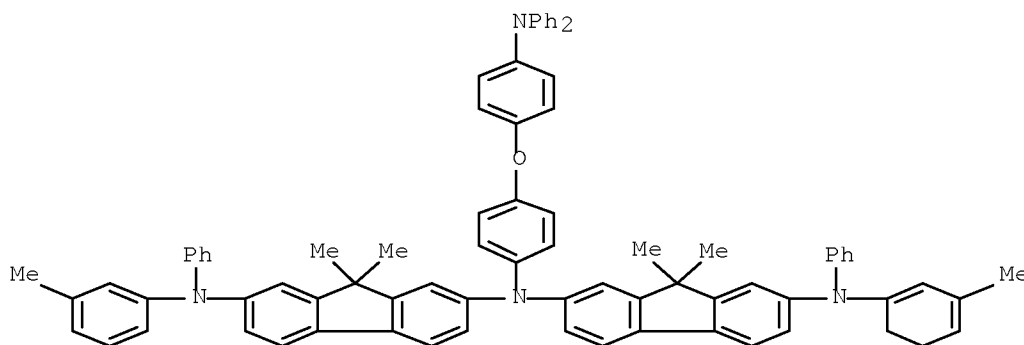
RN 309715-98-8 HCAPLUS  
 CN 9H-Fluorene-2,7-diamine, N2-[9,9-dimethyl-7-[(3-methylphenyl)phenylamino]-9H-fluoren-2-yl]-N2-[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-9,9-dimethyl-N7-(3-methylphenyl)-N7-phenyl- (CA INDEX NAME)



RN 309716-00-5 HCAPLUS  
 CN 9H-Fluorene-2,7-diamine, N2-[4'-[bis(4-methylphenyl)amino][1,1'-biphenyl]-4-yl]-N2-[7-[bis(4-methylphenyl)amino]-9,9-dimethyl-9H-fluoren-2-yl]-9,9-dimethyl-N7,N7-diphenyl- (CA INDEX NAME)



RN 309716-08-3 HCAPLUS  
 CN 9H-Fluorene-2,7-diamine, N2-[9,9-dimethyl-7-[(3-methyl-1,3-cyclohexadien-1-yl)phenylamino]-9H-fluoren-2-yl]-N2-[4-[4-(diphenylamino)phenoxy]phenyl]-9,9-dimethyl-N7-(3-methylphenyl)-N7-phenyl- (CA INDEX NAME)



IC ICM C07C211-61  
 ICS C07C217-92; C07C323-37; C07D209-86; C07D265-38; C07D333-36  
 CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 IT Electroluminescent devices  
 (preparation of (diarylamino)[((arylamino)aryl)amino]fluorene derivs. as hole transport materials for organic electroluminescent devices)  
 IT 228706-59-0P 228706-60-3P 228706-63-6P  
 228706-66-9P 228706-68-1P 228706-73-8P  
 228706-79-4P 228706-84-1P 309715-70-6P  
 309715-71-7P 309715-73-9P 309715-76-2P  
 309715-79-5P 309715-82-0P 309715-84-2P  
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 309715-98-8P 309716-00-5P 309716-02-7P  
 309716-04-9P 309716-06-1P 309716-08-3P  
 (preparation of (diarylamino)[((arylamino)aryl)amino]fluorene derivs. as hole transport materials for organic electroluminescent devices)

L21 ANSWER 13 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2000:377749 HCAPLUS Full-text

DOCUMENT NUMBER: 133:96506

TITLE: Thermally stable organic light-emitting diodes using new families of hole-transporting amorphous molecular materials

AUTHOR(S): Shirota, Y.; Okumoto, K.; Inada, H.

CORPORATE SOURCE: Faculty of Engineering, Department of Applied Chemistry, Osaka University, Yamadaoka, Suita, Osaka, 565-0871, Japan

SOURCE: Synthetic Metals (2000), 111-112, 387-391

CODEN: SYMEDZ; ISSN: 0379-6779

PUBLISHER: Elsevier Science S.A.

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 07 Jun 2000

AB A new family of hole-transporting amorphous mol. materials with high glass-transition temps. (T<sub>g</sub>) were designed and synthesized. They include 4,4',4''-tris[biphenyl-2-yl(phenyl)amino]triphenylamine (o-PTDATA), 4,4',4''-tris[biphenyl-3-yl(phenyl)amino]triphenylamine (m-PTDATA), and 4,4',4''-tris[biphenyl-4-yl(3'-methylphenyl)amino]triphenylamine (p-PMTDATA). These compds. form readily stable amorphous glasses with high T<sub>g</sub> and to function as materials for hole-injection layers in contact with the ITO electrode in multilayer organic light-emitting diodes (OLEDs). Such devices consisting of

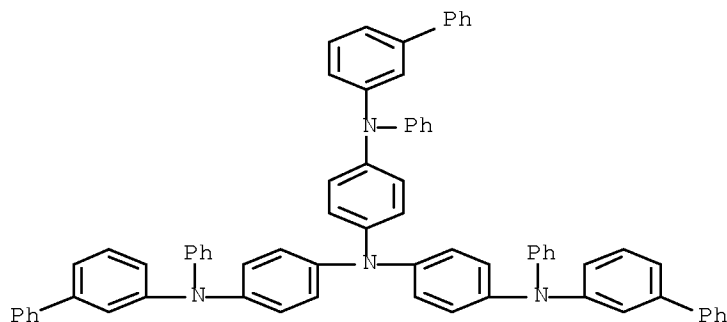
double hole-transport layers of o-PTDATA or p-PMTDATA and N,N'-di(biphenyl-4-yl)-N,N'-diphenyl-[1,1'-biphenyl]-4,4'-diamine and the emitting layer of tris(8-quinolinolato)aluminum exhibit high performance and thermal stability. The devices operated at 150°, retaining a luminance of 80% of the initial value measured at 20°.

IT 214545-00-3P 281678-62-4P 281678-63-5P

(thermally stable organic light-emitting diodes using new families of hole-transporting amorphous mol. materials)

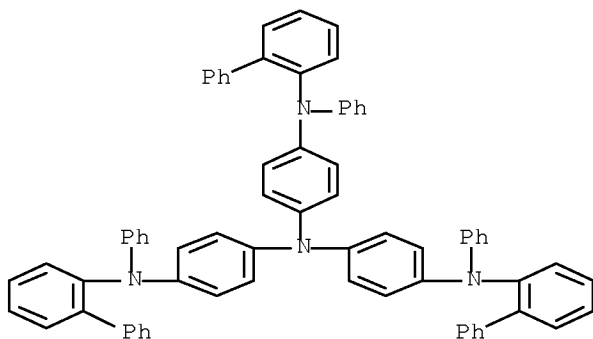
RN 214545-00-3 HCAPLUS

CN 1,4-Benzenediamine, N1-[1,1'-biphenyl]-3-yl-N4,N4-bis[4-([1,1'-biphenyl]-3-ylphenylamino)phenyl]-N1-phenyl- (CA INDEX NAME)



RN 281678-62-4 HCAPLUS

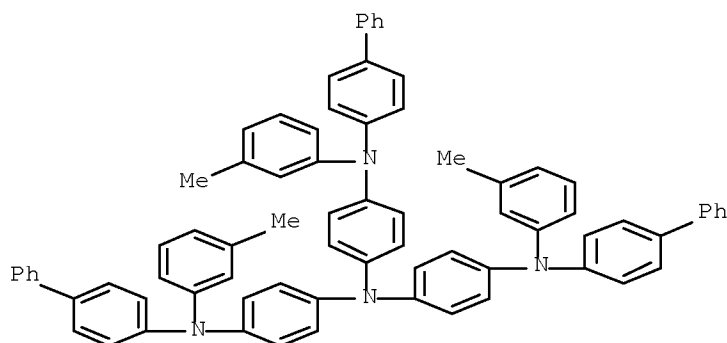
CN 1,4-Benzenediamine, N1-[1,1'-biphenyl]-2-yl-N4,N4-bis[4-([1,1'-biphenyl]-2-ylphenylamino)phenyl]-N1-phenyl- (CA INDEX NAME)



RN 281678-63-5 HCAPLUS

CN 1,4-Benzenediamine, N1-[1,1'-biphenyl]-4-yl-N4,N4-bis[4-([1,1'-biphenyl]-4-yl(3-methylphenyl)amino)phenyl]-N1-(3-methylphenyl)- (CA INDEX NAME)





CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 75, 76  
 IT **Electroluminescent devices**  
 Glass transition temperature  
 Hole transport  
 Melting point  
 Thermal stability  
 (thermally stable organic light-emitting diodes using new families of hole-transporting amorphous mol. materials)  
 IT 214545-00-3P 281678-62-4P 281678-63-5P  
 (thermally stable organic light-emitting diodes using new families of hole-transporting amorphous mol. materials)  
 REFERENCE COUNT: 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L21 ANSWER 14 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1999:815169 HCAPLUS Full-text

DOCUMENT NUMBER: 132:23286

TITLE: Conducting polymers for semiconductor devices

INVENTOR(S): Sage, Ian Charles; Wood, Emma Louise; Feast, William James; Peace, Richard John

PATENT ASSIGNEE(S): Secretary of State for Defence, UK

SOURCE: Brit. UK Pat. Appl., 24 pp.

CODEN: BAXXDU

DOCUMENT TYPE: Patent

LANGUAGE: English

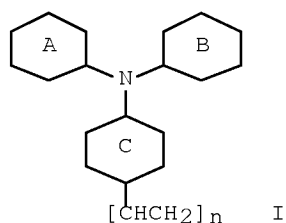
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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GB 2334959	A	19990908	GB 1998-4822	19980305
			<--	
PRIORITY APPLN. INFO.:			GB 1998-4822	19980305
			<--	

ED Entered STN: 28 Dec 1999

GI



AB Polymers of formula I are provided which are incorporated in organic compns. for use as elec. and electronically active materials used in semiconductor devices such as organic light emitting diodes and photorefractive devices, wherein A, B, and C are independently selected from Ph and C1-8 alkyl, C1-8 alkoxy, or C1-8 dialkylamino-substituted Ph, n = 3-10,000. Thus poly(4-vinyltriphenylamine) was prepared by acylation of triphenylamine with acetyl chloride to give 4-acyltriphenylamine, followed by treating of 4-acyltriphenylamine with triisopropoxy aluminum to give monomer 4-vinyltriphenylamine, then purifying and free radical polymerization of the monomer, showing number average mol. weight 5460, weight average mol. weight 9940, and polydispersity index 1.82.

IT 251932-75-9P

(preparation of conducting polymers for semiconductor devices)

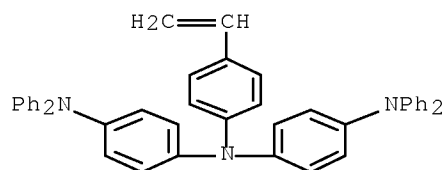
RN 251932-75-9 HCAPLUS

CN 1,4-Benzenediamine, N1-[4-(diphenylamino)phenyl]-N1-(4-ethenylphenyl)-N4,N4-diphenyl-, homopolymer (CA INDEX NAME)

CM 1

CRN 251932-74-8

CMF C44 H35 N3



IC ICM C08F026-02

CC 35-4 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 73, 76

ST polyvinyltriphenylamine conducting polymer prepn  
radical polymn; semiconductor polyvinyltriphenylamine  
conducting polymer prepn

IT Conducting polymers

Electroluminescent devices

Luminescence

Luminescent substances

Photorefractive materials

Semiconductor devices

(preparation of conducting polymers for semiconductor devices)

IT Polymerization  
(radical; preparation of conducting polymers for semiconductor devices)

IT 1756-32-7P  
(intermediate; preparation of conducting polymers for semiconductor devices)

IT 25069-74-3P, 4-Vinyltriphenylamine  
(monomer; preparation of conducting polymers for semiconductor devices)

IT 78099-29-3P  
(preparation of conducting polymers for semiconductor devices)

IT 167893-11-0P 227176-03-6P 247132-45-2P 251932-67-9P  
251932-69-1P 251932-71-5P 251932-73-7P 251932-75-9P  
251932-77-1P 251932-79-3P 251932-81-7P  
(preparation of conducting polymers for semiconductor devices)

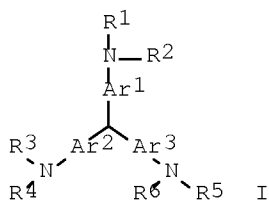
IT 75-36-5, Acetyl chloride 603-34-9, Triphenylamine  
(starting material; preparation of conducting polymers for semiconductor devices)

L21 ANSWER 15 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

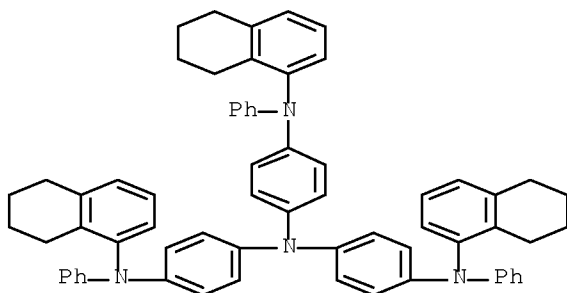
ACCESSION NUMBER: 1999:670067 HCAPLUS Full-text  
DOCUMENT NUMBER: 131:294207  
TITLE: Hole-transporting material and use thereof  
INVENTOR(S): Tamano, Michiko; Okutsu, Satoshi; Enokida, Toshio  
PATENT ASSIGNEE(S): Toyo Ink Manufacturing Co., Ltd., Japan  
SOURCE: U.S., 22 pp., Cont.-in-part of U.S. Ser. No. 762,921, abandoned.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 2  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 5968675	A	19991019	US 1998-85251	19980528
			<--	
JP 09222741	A	19970826	JP 1996-306049	19961118
			<--	
PRIORITY APPLN. INFO.:			JP 1995-321345	A 19951211
			<--	
			JP 1996-306049	A 19961118
			<--	
			US 1996-762921	B2 19961210
			<--	

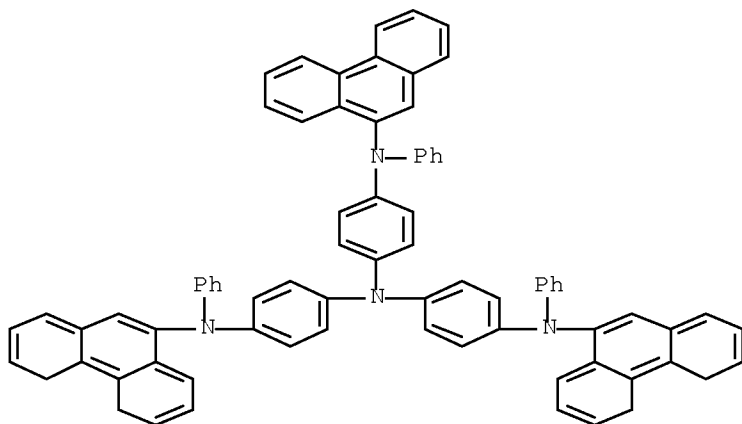
OTHER SOURCE(S): MARPAT 131:294207  
ED Entered STN: 21 Oct 1999  
GI



- AB Hole-transporting materials are described by the general formula I (R1-6 = independently selected (un)substituted aryl groups,  $\geq 1$  of which is an aryl group having a cycloalkyl ring or  $\geq 1$  of which comprises fused aromatic rings having  $\geq 3$  fused rings; and each of Ar1-3 = independently selected (un)substituted arylene groups). Organic electroluminescent devices and electrophotog. photoreceptors employing the materials are also described.
- IT 192181-03-6P  
(hole-transporting materials based on triarylamine derivs. and their use in electroluminescent devices and electrophotog. photoreceptors)
- RN 192181-03-6 HCAPLUS
- CN 1,4-Benzenediamine, N1-phenyl-N4,N4-bis[4-[phenyl(5,6,7,8-tetrahydro-1-naphthalenyl)amino]phenyl]-N1-(5,6,7,8-tetrahydro-1-naphthalenyl)- (CA INDEX NAME)



- IT 246874-92-0P  
(hole-transporting materials based on triarylamine derivs. and their use in electroluminescent devices and electrophotog. photoreceptors)
- RN 246874-92-0 HCAPLUS
- CN 1,4-Benzenediamine, N1-(4,5-dihydro-9-phenanthrenyl)-N4-[4-[(4,5-dihydro-9-phenanthrenyl)phenylamino]phenyl]-N4-[4-(9-phenanthrenylphenylamino)phenyl]-N1-phenyl- (CA INDEX NAME)



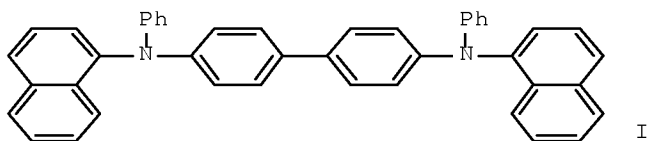
IC ICM H05B033-14  
 INCL 428690000  
 CC 76-2 (Electric Phenomena)  
 Section cross-reference(s): 73, 74  
 IT Electroluminescent devices  
 Electrophotographic photoconductors (photoreceptors)  
 (hole-transporting materials based on triarylamine derivs. and  
 their use in electroluminescent devices and electrophotog.  
 photoreceptors)  
 IT Electric conductors  
 (hole; hole-transporting materials based on triarylamine derivs.  
 and their use in electroluminescent devices and electrophotog.  
 photoreceptors)  
 IT 192181-03-6P  
 (hole-transporting materials based on triarylamine derivs. and  
 their use in electroluminescent devices and electrophotog.  
 photoreceptors)  
 IT 246874-92-0P  
 (hole-transporting materials based on triarylamine derivs. and  
 their use in electroluminescent devices and electrophotog.  
 photoreceptors)  
 REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L21 ANSWER 16 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 1999:530973 HCAPLUS Full-text  
 DOCUMENT NUMBER: 131:157658  
 TITLE: Method for purification of  
 4,4'-bis(diarylamino)-1,1'-biphenyl by liquid  
 chromatography using two solvent systems  
 INVENTOR(S): Yazawa, Tomoya  
 PATENT ASSIGNEE(S): Casio Computer Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 11228508	A	19990824	JP 1998-49975	19980217
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PRIORITY APPLN. INFO.:			JP 1998-49975	19980217
			<--	

ED Entered STN: 25 Aug 1999  
GI

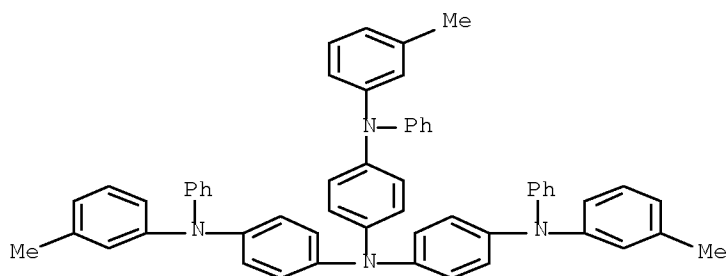


AB A product obtained by Ullmann reaction of a first raw material with an excess of a ~~second~~ raw material which also serves as a high b.p. solvent for the reaction is purified by carrying out (1) a first liquid chromatog. using a first solvent as the mobile phase which exhibit insoly. or sparring solubility for the product but is capable of dissolving the unreacted ~~second~~ raw material, to completely elute out the excess ~~second~~ raw material and then (2) a ~~second~~ chromatog. using a ~~second~~ solvent as the mobile phase which is capable of dissolving the product to elute out the product. This chromatog. process removes the excess raw material with high boiling pt which is difficult to remove by distillation and thereby enables to purify a product at normal temperature without exposing it to high temperature and improves the quality and recovery ratio of the product. Thus, a THF extract of Ullmann reaction product containing N,N,N',N'-tetrakis(1-naphthyl)-1,1'-binaphthyl-3,3'-dimethyl-4,4'-diamine (I) (t-NPC) and 1-iodonaphthalene, which is obtained by reaction of N,N'-diphenylbenzidine with 2 equiv of 1-iodonaphthalene in the presence of Cu and K<sub>2</sub>CO<sub>3</sub>, was dissolved in a small amount of toluene to prepare a 50 mL sample solution. The sample solution was applied to a column of silica gel (400 g, 45 mm diameter + 700 mm length). The column was eluted using 2,000 mL hexane as the first mobile phase in which I is insol. or sparingly soluble, for eluting out 1-iodonaphthalene to sep. it from I also containing Ullmann reaction byproducts. The impurities of I containing the latter byproducts adsorbed on the column were dissolved in THF and isolated by distilling off THF. The column was then eluted at .apprx.140 drops/min using a mixed solvent of 3,00 mL toluene and 6,000 mL hexane as the ~~second~~ mobile phase which is a good solvent for I to isolate I in 70% recovery. I thus obtained possesses a good hole transport in electroluminescent device (no data).

IT 124729-98-2F, Tris[4-[phenyl(3-methylphenyl)amino]phenyl]amine  
(method for purification of bis(diarylamino)biphenyl by liquid chromatog. using two solvent systems)

RN 124729-98-2 HCAPLUS

CN 1,4-Benzenediamine, N1-(3-methylphenyl)-N4,N4-bis[4-[(3-methylphenyl)phenylamino]phenyl]-N1-phenyl- (CA INDEX NAME)



IC ICM C07C211-54  
ICS C07C209-84  
CC 25-24 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)  
Section cross-reference(s): 76  
IT **Electroluminescent devices**  
(method for purification of bis(diarylamino)biphenyl as hole transport materials in electroluminescent devices)  
IT 123847-85-8P, 4,4'-Bis(phenyl(naphthalen-1-yl)amino)-1,1'-biphenyl  
~~124729-98-2P~~, Tris[4-[phenyl(3-methylphenyl)amino]phenyl]amine  
236755-83-2P, 4,4'-Bis(di(naphthalen-1-yl)amino)-3,3'-dimethyl-1,1'-biphenyl  
(method for purification of bis(diarylamino)biphenyl by liquid chromatog. using two solvent systems)

L21 ANSWER 17 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1999:350782 HCAPLUS Full-text

DOCUMENT NUMBER: 130:359585

TITLE: Low pressure vapor phase deposition of organic thin films

INVENTOR(S): Forrest, Stephen R.; Burrows, Paul; Ban, Vladimir S.

PATENT ASSIGNEE(S): The Trustees of Princeton University, USA

SOURCE: PCT Int. Appl., 42 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

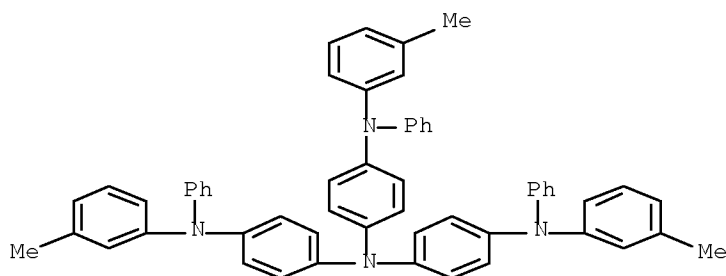
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9925894	A1	19990527	WO 1998-US24424	19981116
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W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6337102	B1	20020108	US 1997-972156	19971117
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AU 9914124	A	19990607	AU 1999-14124	19981116
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EP 1032722	A1	20000906	EP 1998-957997	19981116

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EP 1032722          B1      20041027
  R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
      PT, IE, SI, LT, LV, FI, RO
JP 2001523768      T      20011127      JP 2000-521253      19981116
                                <--
TW 575699          B      20040211      TW 1998-87118943      19981117
                                <--
US 20010002279      A1      20010531      US 2000-736090      20001213
                                <--
US 20020155230      A1      20021024      US 2002-125400      20020419
                                <--
US 6558736          B2      20030506
US 20040007178      A1      20040115      US 2003-427933      20030502
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US 20070131172      A1      20070614      US 2007-655258      20070119
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PRIORITY APPLN. INFO.:      US 1997-972156      A 19971117
                                <--
                                WO 1998-US24424      W 19981116
                                <--
                                US 2000-663143      B1 20000915
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                                US 2000-736090      A1 20001213
                                <--
                                US 2002-125400      A3 20020419
                                <--
                                US 2003-427933      A1 20030502
                                <--
ED  Entered STN:  08 Jun 1999
AB  Methods for preparing organic thin films on substrates are described which
    entail providing a plurality of organic precursors in the vapor phase, and
    reacting the plurality of organic precursors at a pressure below atmospheric
    pressure to produce a film on the substrate.  The methods may be applied to
    the production of organic light-emitting devices.  Apparatus for carrying out
    the methods is described which comprises a reaction chamber; means for heating
    the reaction chamber; means for introducing vapors of organic precursor
    materials into the reaction chamber; and means for reducing the pressure in
    the reaction chamber to below atmospheric pressure.  Apparatus is also
    described which includes a plurality of vacuum chambers and a conveyor for
    moving substrates between them.  Films, including light-emitting and nonlinear
    optical material films, formed by the methods are also claimed.
IT  124729-98-2P, MTDATA
    (methods for low pressure vapor phase deposition of organic thin films
    and deposition apparatus and films produced by the methods)
RN  124729-98-2  HCAPLUS
CN  1,4-Benzenediamine, N1-(3-methylphenyl)-N4,N4-bis[4-[(3-
    methylphenyl)phenylamino]phenyl]-N1-phenyl-  (CA INDEX NAME)

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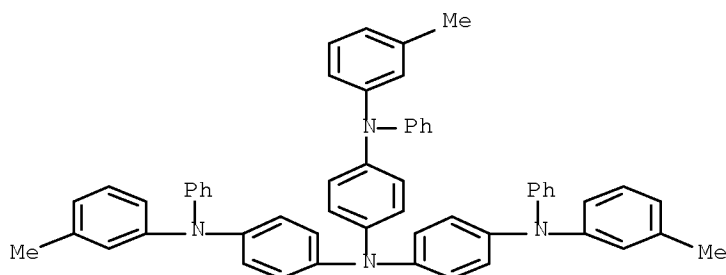
IC ICM C23C016-00  
ICS H01J001-62  
CC 75-1 (Crystallography and Liquid Crystals)  
Section cross-reference(s): 73, 76  
IT Electroluminescent devices  
Electroluminescent devices  
Semiconductor device fabrication  
(methods and. apparatus for low pressure vapor phase deposition of organic thin films for)  
IT 917-23-7P, 5,10,15,20-Tetraphenyl-21H,23H-porphine 2085-33-8P,  
Tris(8-hydroxyquinolinato)aluminum 51325-91-8P,  
4-(Dicyanomethylene)-2-methyl-6-(p-dimethylaminostyryl)-4H-pyran  
65181-78-4P, N,N'-Diphenyl-N,N'-bis(3-methylphenyl)-1,1'-biphenyl-4,4'-  
diamine 123847-85-8P 124729-98-2P, MTDATA 224785-36-8P  
(methods for low pressure vapor phase deposition of organic thin films  
and deposition apparatus and films produced by the methods)  
REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L21 ANSWER 18 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 1999:101276 HCAPLUS Full-text  
DOCUMENT NUMBER: 130:145969  
TITLE: Organic electroluminescent device  
INVENTOR(S): Kawamura, Hisayuki; Hosokawa, Chishio  
PATENT ASSIGNEE(S): Idemitsu Kosan Company Limited, Japan  
SOURCE: Eur. Pat. Appl., 15 pp.  
CODEN: EPXXDW  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 895442	A1	19990203	EP 1998-113813	19980723
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EP 895442	B1	20021204		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 11054271	A	19990226	JP 1997-205579	19970731
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JP 3525034	B2	20040510		
US 6259203	B1	20010710	US 1998-121831	19980724
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US 20010015617	A1	20010823	US 2001-773691	20010202

US 6504300 B2 20030107 <--  
 PRIORITY APPLN. INFO.: JP 1997-205579 A 19970731 <--  
 US 1998-121831 A1 19980724 <--

ED Entered STN: 16 Feb 1999  
 AB Organic electroluminescent devices comprising  $\geq 1$  organic compound layers including  $\geq 1$  organic light-emitting layer sandwiched between a pair of electrodes are described in which  $\geq 1$  of the organic compds. used for forming the organic compound has an electron spin number of  $\leq 10^{13}$ /mg of the compound  
 IT ~~124729-98-2P~~  
 (organic electroluminescent devices employing compds. with relatively low electron spin nos.)  
 RN 124729-98-2 HCAPLUS  
 CN 1,4-Benzenediamine, N1-(3-methylphenyl)-N4,N4-bis[4-[(3-methylphenyl)phenylamino]phenyl]-N1-phenyl- (CA INDEX NAME)



IC ICM H05B033-14  
 ICS G01N024-10  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 76  
 IT Electroluminescent devices  
 Electroluminescent devices  
 (organic; organic electroluminescent devices employing compds. with relatively low electron spin nos.)  
 IT 123847-85-8P ~~124729-98-2P~~ 213527-39-0P  
 (organic electroluminescent devices employing compds. with relatively low electron spin nos.)  
 REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L21 ANSWER 19 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 1998:398346 HCAPLUS Full-text  
 DOCUMENT NUMBER: 129:87816  
 ORIGINAL REFERENCE NO.: 129:17967a,17970a  
 TITLE: Material for organoelectroluminescence device and organoelectroluminescence device using the material  
 INVENTOR(S): Tamano, Michiko; Onikubo, Toshikazu; Okutsu, Satoshi; Enokida, Toshio  
 PATENT ASSIGNEE(S): Toyo Ink Manufacturing Co., Ltd., Japan  
 SOURCE: Eur. Pat. Appl., 26 pp.

10/558,578

CODEN: EPXXDW  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 848579	A2	19980617	EP 1997-310157	19971216
			<--	
EP 848579	A3	19980902		
EP 848579	B1	20030326		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 10233287	A	19980902	JP 1997-301457	19971104
			<--	
JP 3606025	B2	20050105		
US 5948941	A	19990907	US 1997-990193	19971212
			<--	
PRIORITY APPLN. INFO.:			JP 1996-335217	A 19961216
			<--	
			JP 1997-301457	A 19971104
			<--	
OTHER SOURCE(S): MARPAT 129:87816				
ED Entered STN: 29 Jun 1998				
GI				

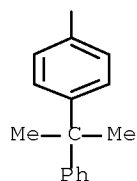
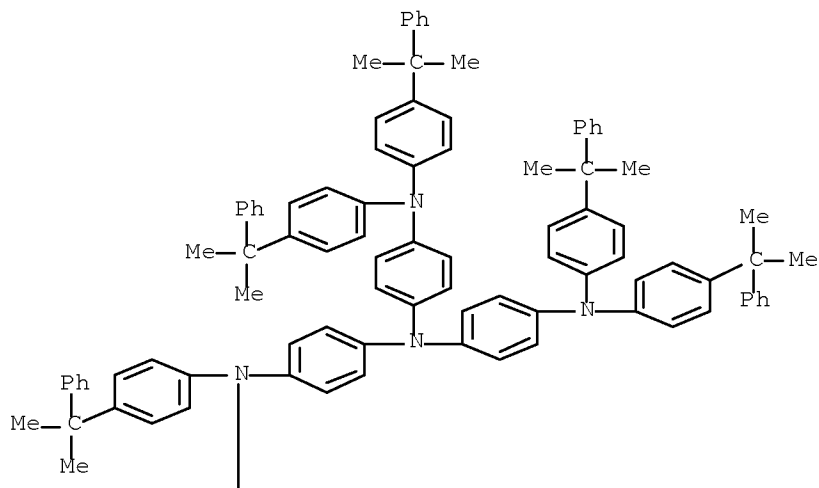
\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB Compds. suitable for use in electroluminescent devices are described by such general formula as I (A= Q, Q1, Q2; Ar1-6 = independently selected (un)substituted aryl groups; X1-6 = independently selected O, S, C:O, SO2, Si(B1)B2, N(B1), PB1, P(:O)B1-, -(CH2)x-O-(CH2)y-, (un)substituted alkylene groups, or (un)substituted alicyclic moieties; B1 and B2 = independently selected (un)substituted alkyl group or a (un)substituted aryl group), etc. The materials may be hole-injecting materials. Devices using the materials, including display devices, are also described, as is the use of the materials in the devices.

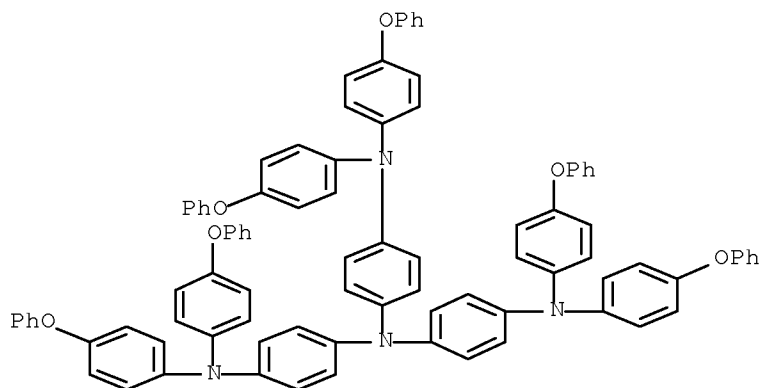
IT 209165-07-1P  
(materials for organic electroluminescent devices based on benzene and triphenylamine derivs. and devices using them)

RN 209165-07-1 HCAPLUS

CN 1,4-Benzenediamine, N,N-bis[4-[bis[4-(1-methyl-1-phenylethyl)phenyl]amino]phenyl]-N',N'-bis[4-(1-methyl-1-phenylethyl)phenyl]- (9CI) (CA INDEX NAME)



IT 209165-09-3P  
 (materials for organic electroluminescent devices based on benzene and triphenylamine derivs. and devices using them)  
 RN 209165-09-3 HCAPLUS  
 CN 1,4-Benzenediamine, N1,N1-bis[4-[bis(4-phenoxyphenyl)amino]phenyl]-N4,N4-bis(4-phenoxyphenyl)- (CA INDEX NAME)



IC ICM H05B033-14  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 74, 76  
 IT **Electroluminescent devices**  
 (materials for organic electroluminescent devices based on benzene and triphenylamine derivs. and devices using them)  
 IT 209165-07-1P  
 (materials for organic electroluminescent devices based on benzene and triphenylamine derivs. and devices using them)  
 IT ~~209165-09-3P~~ 209165-25-3P 209165-30-0P  
 (materials for organic electroluminescent devices based on benzene and triphenylamine derivs. and devices using them)

L21 ANSWER 20 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1998:116628 HCAPLUS Full-text

DOCUMENT NUMBER: 128:173587

ORIGINAL REFERENCE NO.: 128:34101a,34104a

TITLE: A novel class of  $\pi$ -electron dendrimers for thermally and morphologically stable amorphous molecular materials

AUTHOR(S): Katsuma, Katsuhiko; Shirota, Yasuhiko

CORPORATE SOURCE: Department Applied Chemistry, Faculty Engineering, Osaka University, Suita, 565, Japan

SOURCE: Advanced Materials (Weinheim, Germany) (1998), 10(3), 223-226

CODEN: ADVMEW; ISSN: 0935-9648

PUBLISHER: Wiley-VCH Verlag GmbH

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 26 Feb 1998

AB The novel organic hyperbranched  $\pi$ -electron systems, 1,3,5-tris[N-(4'-methylbiphenyl-4-yl)-N-(4-diphenylaminophenyl)amino]benzene (TDAB-G1(a)) and 1,3,5-tris[N-[4-bis(4-methylphenyl)aminophenyl]-N-(4-diphenylaminophenyl)amino]benzene (TDAB-G1(b)), were synthesized via the Ullmann reaction and characterized by <sup>1</sup>H-, <sup>13</sup>C-NMR, electron absorption spectroscopy, and elemental anal. TDAB-G1(a) was obtained as a polycryst. material, whereas TDAB-G1(b) was an amorphous glass. DSC anal. of TDAB-G1(a) gave a m.p. of 187°. When the melted sample was cooled in air, a glass was formed spontaneously. Reheating of the glass sample resulted in a glass transition at T<sub>g</sub> = 128° giving a supercooled liquid. Likewise, the amorphous repptd. sample of TDAB-G1(b) exhibited a glass transition at T<sub>g</sub> = 134° when heated. Unique multiredox processes involving as many as 6- and 9-electron reversible oxidns. were observed in the cyclic voltammograms of TDAB-G1(a) and TDAB-G1(b), resp. TDAB-G1(b) was used as a hole-transport material in a multilayer organic LED consisting of the double-hole transport layer and an emitting layer which contained N,N'-diphenyl-N,N'-bis(3-methylphenyl)-[1,1'-biphenyl]-4,4'-diamine (TPD) doped with rubrene as the emitting material and with tris(8-quinolinolato) Al as the electron transport material. This device emitted yellow light and the electroluminescence showed a peak at 560 nm in agreement with the luminescence peak of rubrene.

IT ~~874946-05-1P~~

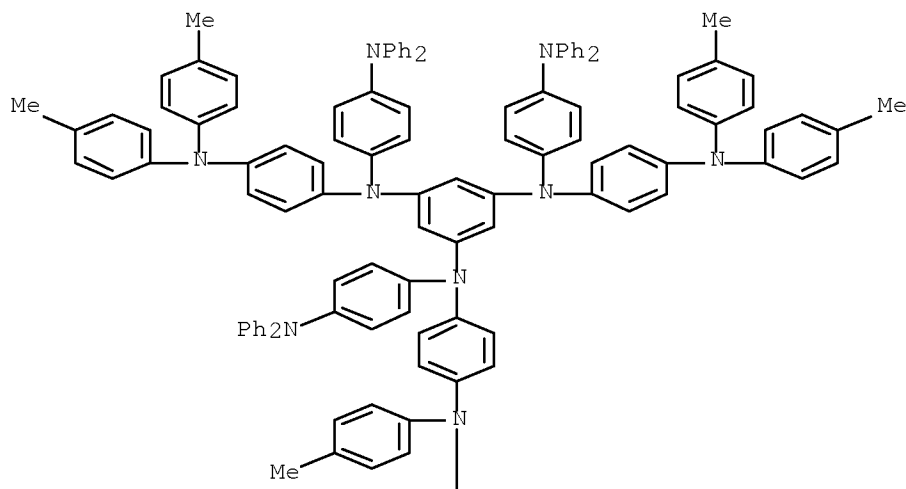
(A novel class of  $\pi$ -electron dendrimers for thermally and morphologically stable amorphous molecular materials)

RN 874946-05-1 HCAPLUS

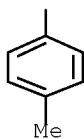
CN 1,3,5-Benzenetriamine, N1,N3,N5-tris[4-[bis(4-methylphenyl)amino]phenyl]-N1,N3,N5-tris[4-(diphenylamino)phenyl]-

(CA INDEX NAME)

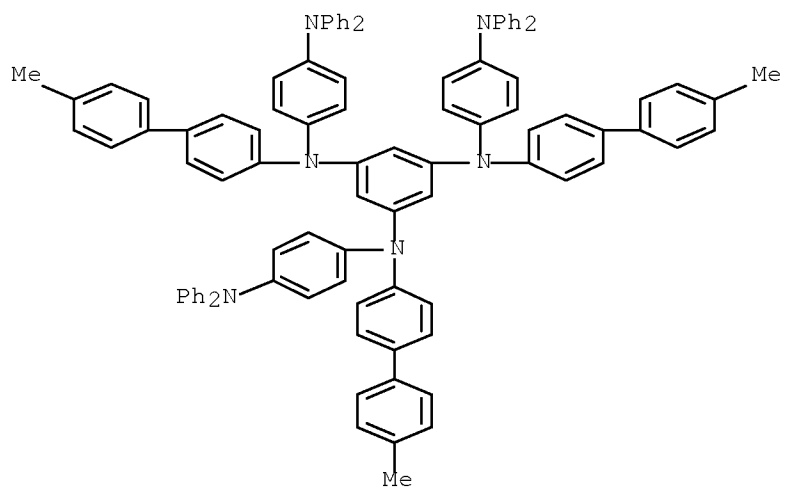
PAGE 1-A



PAGE 2-A



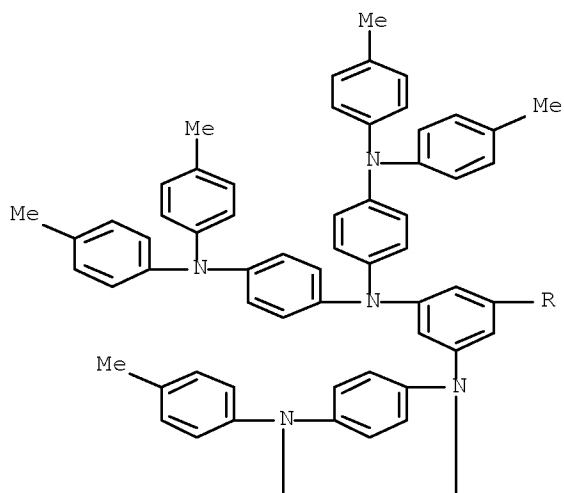
IT 202868-44-8P 202868-45-9P  
 (preparation, glass transition, redox potential, and application in LED  
 as hole transport material of)  
 RN 202868-44-8 HCAPLUS  
 CN 1,3,5-Benzenetriamine, N1,N3,N5-tris[4-(diphenylamino)phenyl]-N1,N3,N5-  
 tris(4'-methyl[1,1'-biphenyl]-4-yl)- (CA INDEX NAME)

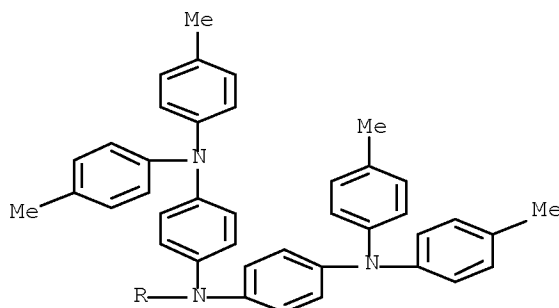
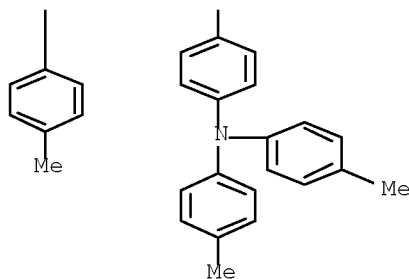


RN 202868-45-9 HCAPLUS

CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexakis[4-[bis(4-methylphenyl)amino]phenyl]- (CA INDEX NAME)

PAGE 1-A





CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 25, 72  
 IT Electroluminescent devices  
 (preparation of dendritic phenylaminobenzene derivs. for hole transport)  
 IT 874946-05-1P  
 (A novel class of  $\pi$ -electron dendrimers for thermally and morphologically stable amorphous molecular materials)  
 IT 202868-44-8P 202868-45-9P  
 (preparation, glass transition, redox potential, and application in LED as hole transport material of)

L21 ANSWER 21 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1997:760093 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 128:41003

ORIGINAL REFERENCE NO.: 128:7927a, 7930a

TITLE: Thermally stable organic electroluminescent device using novel amorphous molecular charge-transport materials,  
 4,4',4''-tris[bis(4'-tert-butylbiphenyl-4-yl)amino]triphenylamine and  
 4,4',4''-tri(N-carbazolyl)triphenylamine

AUTHOR(S): Ogawa, Hiromitsu; Inada, Hiroshi; Shiota, Yasuhiko

CORPORATE SOURCE: Dep. Applied Chem., Fac. Eng., Osaka Univ., Suita, 565, Japan



SOURCE: Macromolecular Symposia (1997), Volume  
 Date 1998, 125 (Organic Light-Emitting Materials  
 and Devices), 171-180  
 CODEN: MSYMEC; ISSN: 1022-1360

PUBLISHER: Huethig & Wepf Verlag

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 05 Dec 1997

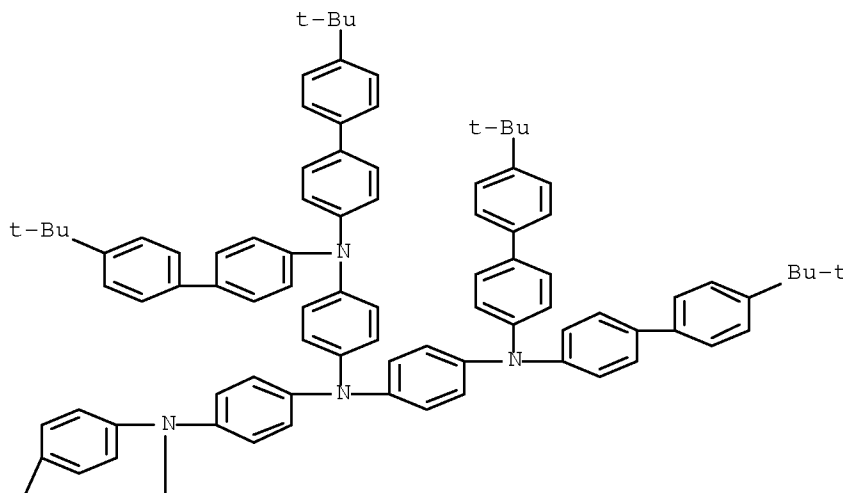
AB For the purpose of developing an amorphous mol. material with a high glass transition temperature (T<sub>g</sub>) and a low ionization potential for use as a charge-transport layer in organic electroluminescent (EL) devices, a novel starburst mol., 4,4',4''-tris[bis(4'-tert-butylbiphenyl-4-yl)amino]triphenylamine (t-Bu-TBATA), was designed and synthesized. T-Bu-TBATA was found to form readily a stable glass with a T<sub>g</sub> of 203°. A multilayer EL device consisting of double hole transport layers of t-Bu-TBATA and 4,4',4''-tri(N-carbazolyl)triphenylamine and an emitting layer of tris(8-quinolinolato) Al was fabricated and its performances were examined. The device was found to exhibit good performances and to be thermally stable, operating even at 170°.

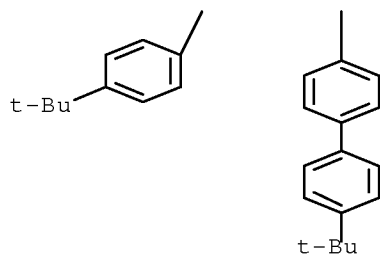
IT 199674-26-5P  
 (preparation, glass transition temperature, and performance in electroluminescent device as charge transport layer of)

RN 199674-26-5 HCAPLUS

CN 1,4-Benzenediamine, N1,N1-bis[4-[bis[4'-(1,1-dimethylethyl)[1,1'-biphenyl]-4-yl]amino]phenyl]-N4,N4-bis[4'-(1,1-dimethylethyl)[1,1'-biphenyl]-4-yl]- (CA INDEX NAME)

PAGE 1-A





CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 22, 76  
 IT Electroluminescent devices  
 (fabrication by vacuum deposition of triphenylamine derivs. and their performance)  
 IT 199674-26-5P  
 (preparation, glass transition temperature, and performance in electroluminescent device as charge transport layer of)

L21 ANSWER 22 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1997:618270 HCAPLUS Full-text

DOCUMENT NUMBER: 127:263592

ORIGINAL REFERENCE NO.: 127:51481a, 51484a

TITLE: Crosslinkable or chain extendable polyarylpolyamines and films for electroluminescent devices

INVENTOR(S): Woo, Edmund P.; Inbasekaran, Michael; Shiang, William R.; Roof, Gordon R.; Wu, Weishi

PATENT ASSIGNEE(S): Dow Chemical Co., USA

SOURCE: PCT Int. Appl., 57 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9733193	A2	19970912	WO 1997-US2643	19970220
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WO 9733193	A3	20020926		
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, YU				
RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9722776	A	19970922	AU 1997-22776	19970220
<--				
US 5929194	A	19990727	US 1997-967348	19971027
<--				
PRIORITY APPLN. INFO.:			US 1996-606180	A 19960223
<--				

10/558,578

US 1996-696280

A 19960813

<--

WO 1997-US2643

W 19970220

<--

OTHER SOURCE(S): MARPAT 127:263592

ED Entered STN: 27 Sep 1997

AB The polyarylpolyamines are prepared by the reaction of  $\geq 1$  tertiary di- or polyarylamine having 2 halogen substituents with a haloarom. compound having a crosslinkable reactive group or trialkylsiloxy moiety. Films of the title compds., as well as films of polymers of their crosslinkable species, are efficient in the transport of pos. charges when exposed to relatively low voltage levels, and demonstrate solvent and heat resistance.

IT 195730-72-4P

(crosslinkable or chain extendable polyarylpolyamines for solvent-resistant films for electroluminescent devices)

RN 195730-72-4 HCAPLUS

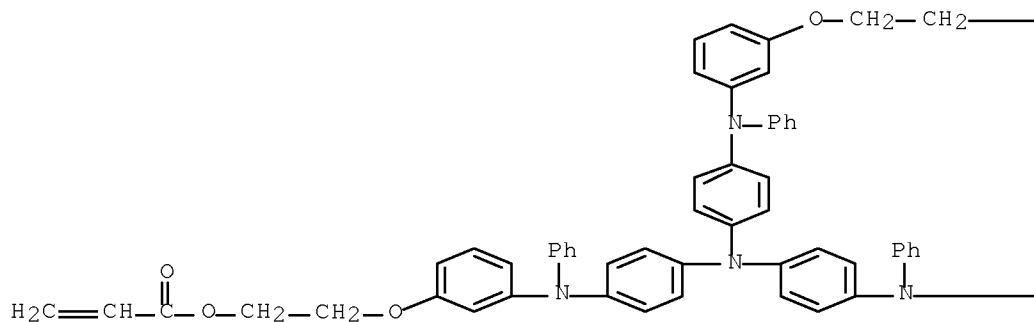
CN 2-Propenoic acid, nitrilotris[4,1-phenylene(phenylimino)-3,1-phenyleneoxy-2,1-ethanediyl] ester, homopolymer (9CI) (CA INDEX NAME)

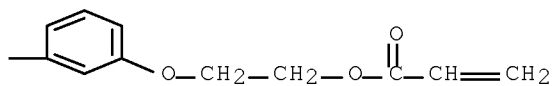
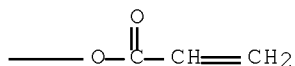
CM 1

CRN 195730-64-4

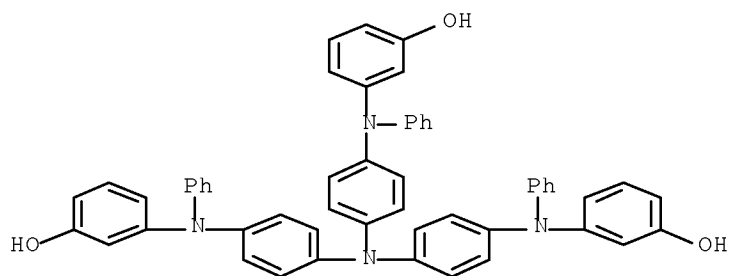
CMF C69 H60 N4 O9

PAGE 1-A

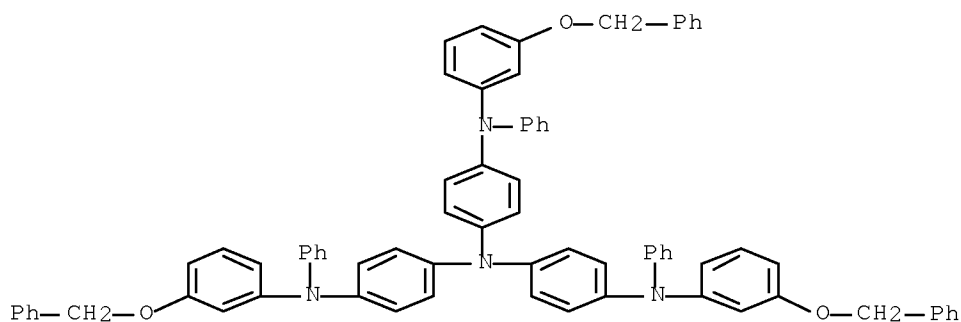




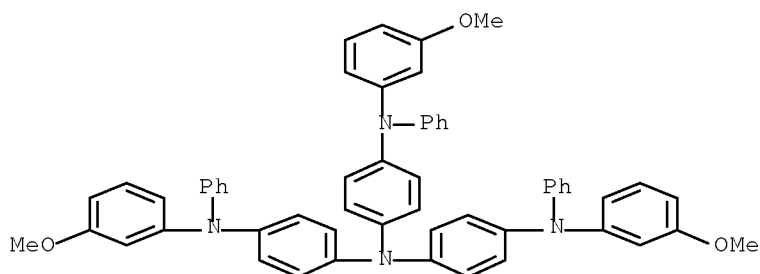
IT 195730-60-0DP, reaction products with benzyl chloride and  
vinylbenzyl chloride 195730-66-6P  
(crosslinkable or chain extendable polyarylpolyamines for  
solvent-resistant films for electroluminescent devices)  
RN 195730-60-0 HCAPLUS  
CN Phenol, 3,3',3''-[nitrilotris[4,1-phenylene(phenylimino)]]tris- (9CI)  
(CA INDEX NAME)



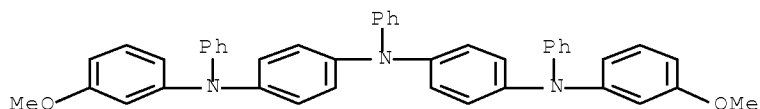
RN 195730-66-6 HCAPLUS  
CN 1,4-Benzenediamine, N1-phenyl-N1-[3-(phenylmethoxy)phenyl]-N4,N4-bis[4-  
[phenyl[3-(phenylmethoxy)phenyl]amino]phenyl]- (CA INDEX NAME)



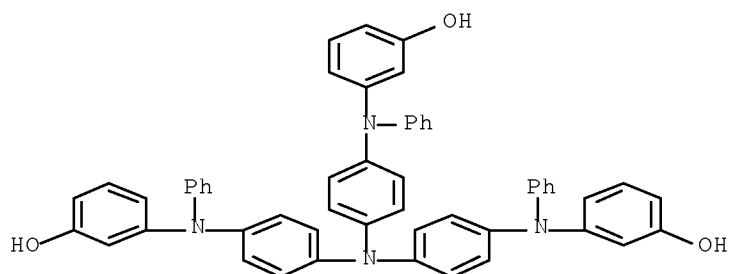
IT 192134-45-5P 195730-58-6P 195730-60-0P  
 (crosslinkable or chain extendable polyarylpolyamines for  
 solvent-resistant films for electroluminescent devices)  
 RN 192134-45-5 HCAPLUS  
 CN 1,4-Benzenediamine, N1-(3-methoxyphenyl)-N4,N4-bis[4-[(3-  
 methoxyphenyl)phenylamino]phenyl]-N1-phenyl- (CA INDEX NAME)



RN 195730-58-6 HCAPLUS  
 CN 1,4-Benzenediamine, N1-(3-methoxyphenyl)-N4-[4-[(3-  
 methoxyphenyl)phenylamino]phenyl]-N1,N4-diphenyl- (CA INDEX NAME)



RN 195730-60-0 HCAPLUS  
 CN Phenol, 3,3',3''-[nitrilotris[4,1-phenylene(phenylimino)]]tris- (9CI)  
 (CA INDEX NAME)



IT 195891-85-1P  
 (film; crosslinkable or chain extendable polyarylpolyamines for  
 solvent-resistant films for electroluminescent devices)  
 RN 195891-85-1 HCAPLUS  
 CN 1,4-Benzenediamine, N-[3-[(ethenylphenyl)methoxy]phenyl]-N',N'-bis[4-

10/558,578

[[3-[(ethenylphenyl)methoxy]phenyl]phenylamino]phenyl]-N-phenyl-,  
homopolymer (9CI) (CA INDEX NAME)

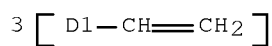
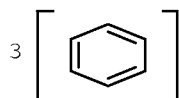
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CRN 195891-84-0

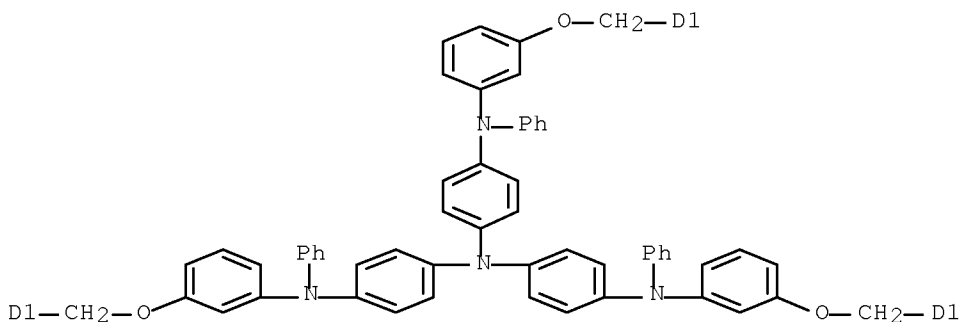
CMF C81 H66 N4 O3

CCI IDS

PAGE 1-A



PAGE 2-A

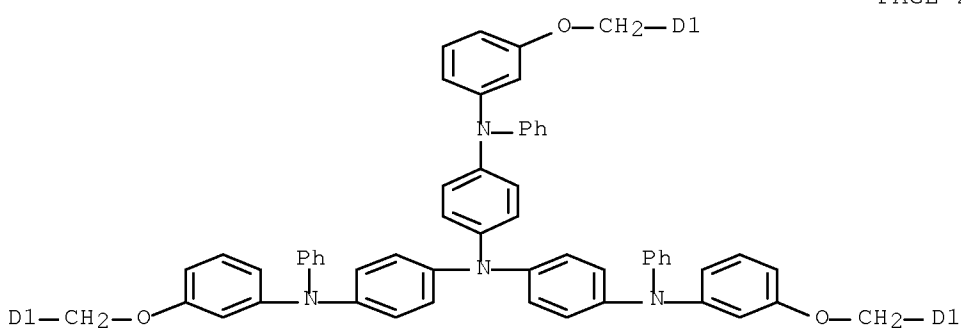
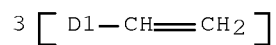
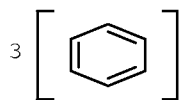


IT 195891-84-0P

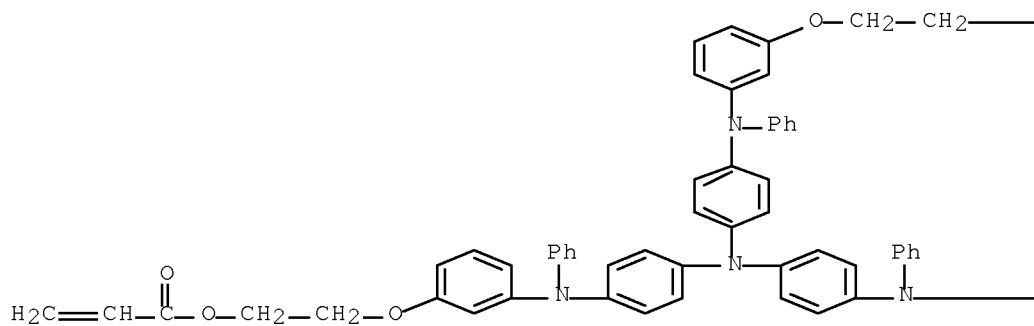
(preparation and polymerization; crosslinkable or chain extendable  
polyarylpolyamines for solvent-resistant films for  
electroluminescent devices)

RN 195891-84-0 HCAPLUS

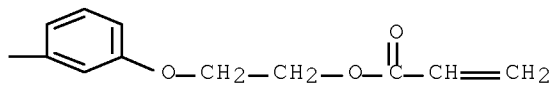
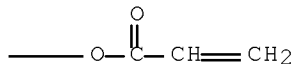
CN 1,4-Benzenediamine, N-[3-[(ethenylphenyl)methoxy]phenyl]-N',N'-bis[4-  
[[3-[(ethenylphenyl)methoxy]phenyl]phenylamino]phenyl]-N-phenyl- (9CI)  
(CA INDEX NAME)



IT 195730-64-4P  
 (preparation and polymerization; crosslinkable or chain extendable  
 polyarylpolyamines for solvent-resistant films for  
 electroluminescent devices)  
 RN 195730-64-4 HCAPLUS  
 CN 2-Propenoic acid, nitrilotris[4,1-phenylene(phenylimino)-3,1-  
 phenyleneoxy-2,1-ethanediyl] ester (9CI) (CA INDEX NAME)



PAGE 1-B



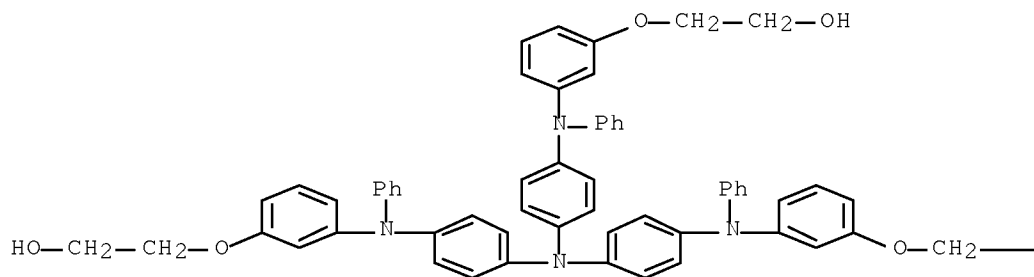
IT 195730-62-2P

(reaction with acryloyl chloride; crosslinkable or chain extendable  
polyarylpolyamines for solvent-resistant films for  
electroluminescent devices)

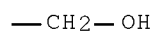
RN 195730-62-2 HCAPLUS

CN Ethanol, 2,2',2''-[nitrilotris[4,1-phenylene(phenylimino)-3,1-  
phenyleneoxy]]tris- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B





IC ICM G03C  
 CC 37-3 (Plastics Manufacture and Processing)  
 Section cross-reference(s): 35, 72  
 IT ~~Electroluminescent devices~~  
     (charge transport layers; crosslinkable or chain extendable  
     polyarylpolyamines for solvent-resistant films for  
     electroluminescent devices)  
 IT ~~195730-72-4P~~  
     (crosslinkable or chain extendable polyarylpolyamines for  
     solvent-resistant films for electroluminescent devices)  
 IT 100308-69-8DP, reaction products with arylamines, oligomer  
 113703-67-6P 195730-31-5P ~~195730-60-0DP~~, reaction products  
 with benzyl chloride and vinylbenzyl chloride ~~195730-66-6P~~  
 195730-71-3P  
     (crosslinkable or chain extendable polyarylpolyamines for  
     solvent-resistant films for electroluminescent devices)  
 IT 100308-67-6P 159191-56-7DP, reaction products with arylamines  
~~192134-45-5P~~ 195730-34-8DP, reaction products with  
 silyl-containing benzenboronic acid 195730-42-8DP, reaction products  
 with silyl-containing benzenboronic acid ~~195730-58-6P~~  
~~195730-60-0P~~  
     (crosslinkable or chain extendable polyarylpolyamines for  
     solvent-resistant films for electroluminescent devices)  
 IT 195730-33-7P 195730-37-1P 195730-38-2P 195730-45-1P  
 195730-51-9P 195730-55-3P ~~195891-85-1P~~  
     (film; crosslinkable or chain extendable polyarylpolyamines for  
     solvent-resistant films for electroluminescent devices)  
 IT 195730-70-2P ~~195891-84-0P~~  
     (preparation and polymerization; crosslinkable or chain extendable  
     polyarylpolyamines for solvent-resistant films for  
     electroluminescent devices)  
 IT 195730-32-6P 195730-36-0P 195730-44-0P 195730-49-5P  
~~195730-53-1P 195730-64-4P~~  
     (preparation and polymerization; crosslinkable or chain extendable  
     polyarylpolyamines for solvent-resistant films for  
     electroluminescent devices)  
 IT 195730-35-9P 195730-43-9P ~~195730-62-2P~~  
     (reaction with acryloyl chloride; crosslinkable or chain extendable  
     polyarylpolyamines for solvent-resistant films for  
     electroluminescent devices)  
 REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L21 ANSWER 23 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 1997:480901 HCAPLUS Full-text  
 DOCUMENT NUMBER: 127:115061  
 ORIGINAL REFERENCE NO.: 127:22069a,22072a  
 TITLE: Hole-transporting material and use thereof  
 INVENTOR(S): Tamano, Michiko; Okutsu, Satoshi; Enokida, Toshio  
 PATENT ASSIGNEE(S): Toyo Ink Manufacturing Co., Ltd., Japan  
 SOURCE: Eur. Pat. Appl., 32 pp.  
           CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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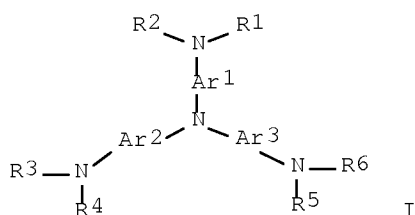
10/558,578

EP 779765	A2	19970618	EP 1996-309019	19961211
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EP 779765	A3	19970730		
EP 779765	B1	20010801		
R: DE, FR, GB				
JP 09222741	A	19970826	JP 1996-306049	19961118
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PRIORITY APPLN. INFO.:

JP 1995-321345	A	19951211
		<--
JP 1996-306049	A	19961118
		<--

OTHER SOURCE(S): MARPAT 127:115061  
 ED Entered STN: 02 Aug 1997  
 GI



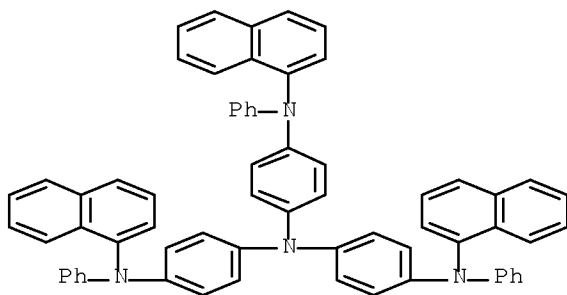
AB Hole-transporting materials comprise triaryl amines described by the general formula I (R1-6 = (un)substituted aryl groups; and Ar1-3 = (un)substituted arylene groups, with the restriction that  $\geq 1$  of R1-6 = comprises fused aromatic rings or is an aryl group having a cycloalkyl ring). Organic electroluminescent devices and electrophotog. photoreceptors employing the materials are also described.

IT 185690-39-5P

(aryl amine hole-transporting materials and apparatus using them)

RN 185690-39-5 HCAPLUS

CN 1,4-Benzenediamine, N1-1-naphthalenyl-N4,N4-bis[4-(1-naphthalenylphenylamino)phenyl]-N1-phenyl- (CA INDEX NAME)



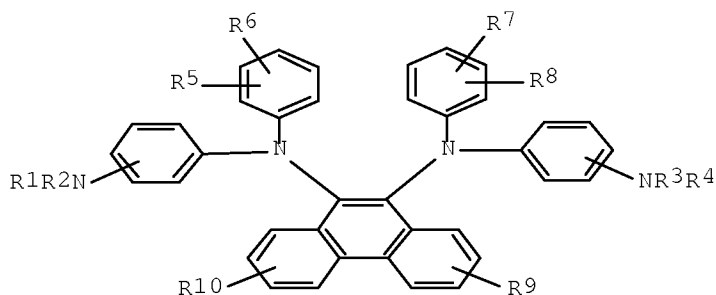
IC ICM H05B033-12  
 ICS G03G005-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 74, 76  
 IT Electroluminescent devices  
 Electrophotographic photoconductors (photoreceptors)  
 (aryl amine hole-transporting materials and apparatus using them)  
 IT 185690-39-SP  
 (aryl amine hole-transporting materials and apparatus using them)

L21 ANSWER 24 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 1996:197218 HCAPLUS Full-text  
 DOCUMENT NUMBER: 124:274120  
 ORIGINAL REFERENCE NO.: 124:50463a,50466a  
 TITLE: Hole-transporting material and electroluminescent device and electrophotographic device using it  
 INVENTOR(S): Tamano, Michiko; Onikubo, Shunichi; Kamimura, Toshifumi; Ogawa, Tadashi; Enokida, Toshio  
 PATENT ASSIGNEE(S): Toyo Ink Mfg Co, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08020771	A	19960123	JP 1994-157079	19940708
			<--	
JP 3463358	B2	20031105		
PRIORITY APPLN. INFO.:			JP 1994-157079	19940708
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OTHER SOURCE(S): MARPAT 124:274120  
 ED Entered STN: 06 Apr 1996  
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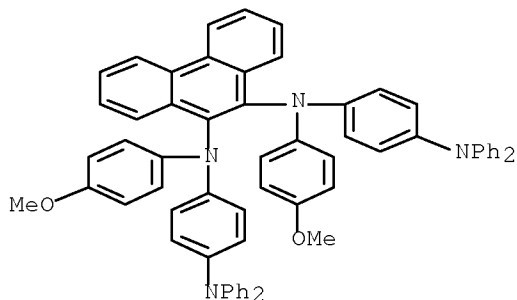
I

AB The hole-transporting material consists of a phenanthrene derivative I (R1-4 = H, alkyl, alkoxy, carbocyclic aromatic group; R5-8 = H, halo, alkyl, alkoxy, cycloalkyl, carbocyclic aromatic group, heterocyclic group; R9-10 = H, halo, alkyl, alkoxy; R1-10 may be substituted).  
 IT 175395-70-7P

(phenanthrene derivative hole-transporting material for  
electroluminescent device and electrophotog. device)

RN 175395-70-7 HCAPLUS

CN 9,10-Phenanthrenediamine, N9,N10-bis[4-(diphenylamino)phenyl]-N9,N10-bis(4-methoxyphenyl)- (CA INDEX NAME)



IC ICM C09K011-06

ICS G03G005-06; H05B033-00

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 25, 74

IT Electroluminescent devices

(phenanthrene derivative hole-transporting material for  
electroluminescent device and electrophotog. device)

IT Electrophotographic photoconductors and photoreceptors

(phenanthrene derivative hole-transporting material for  
electroluminescent device and electrophotog. photoreceptor)

IT 175395-70-7P

(phenanthrene derivative hole-transporting material for  
electroluminescent device and electrophotog. device)

L21 ANSWER 25 OF 25 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1994:177900 HCAPLUS Full-text

DOCUMENT NUMBER: 120:177900

ORIGINAL REFERENCE NO.: 120:31193a,31196a

TITLE: Novel amorphous molecular materials: the starburst molecule  
1,3,5-tris[N-(4-diphenylaminophenyl)phenylamino]benzene

AUTHOR(S): Ishikawa, Wataru; Noguchi, Kisaburo; Kuwabara, Yoshiyuki; Shirota, Yasuhiko

CORPORATE SOURCE: Fac. Eng., Osaka Univ., Suita, 565, Japan

SOURCE: Advanced Materials (Weinheim, Germany) (1993), 5(7-8), 559-61

CODEN: ADVMEW; ISSN: 0935-9648

DOCUMENT TYPE: Journal

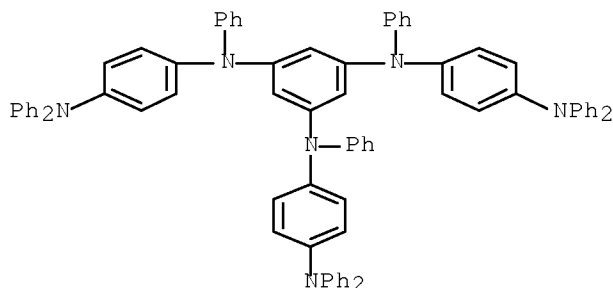
LANGUAGE: English

ED Entered STN: 02 Apr 1994

AB The synthesis, morphol., and solid-state properties of the novel starburst mol. 1,3,5-tris[N-(4-diphenylaminophenyl)phenylamino]benzene (I) are described. UV-, phosphorescence, and fluorescence spectra of I are red-shifted relative to 1,3,5-tris[(4-diphenylaminophenyl)amino]benzene. The compound I readily forms a stable amorphous glass in relation to a glass-transition temperature of 108° when cooled from a melt. The ratio of

photocurrent to dark current of the amorphous I film (thickness 0.18  $\mu\text{m}$ ) was .apprx.200 at elec. field of  $2 + 10^5 \text{ V-cm}^{-1}$  under exposure with 365 nm at 5.4 mW-cm<sup>-2</sup>. The films of I function as a photoactive pn heterojunction-type photovoltaic devices, and a charge-transport material for electroluminescent devices.

IT 153521-90-5P  
(preparation and morphol. of photo- and electroactive amorphous material of)  
RN 153521-90-5 HCAPLUS  
CN 1,3,5-Benzenetriamine, N1,N3,N5-tris[4-(diphenylamino)phenyl]-N1,N3,N5-triphenyl- (CA INDEX NAME)



CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 22, 73, 76  
ST trisdiphenylaminophenylphenylaminobenzene amorphous film  
photoconductor; photovoltaic device starburst mol;  
electroluminescent device starburst mol; starburst mol photoactive electroactive  
IT Electroluminescent devices  
(charge-transport materials for, amorphous tris(diphenylaminophenyl)phenylaminobenzene as)  
IT Photoconductivity and Photoconduction  
(of amorphous tris(diphenylaminophenyl)phenylaminobenzene)  
IT 153521-90-5P  
(preparation and morphol. of photo- and electroactive amorphous material of)

=> d his nofile

(FILE 'HOME' ENTERED AT 11:31:49 ON 15 APR 2009)

FILE 'HCAPLUS' ENTERED AT 11:32:03 ON 15 APR 2009

L1           1 SEA ABB=ON   PLU=ON   US20060241202/PN  
              SEL RN

FILE 'REGISTRY' ENTERED AT 11:32:14 ON 15 APR 2009

L2           6 SEA ABB=ON   PLU=ON   (807374-46-5/BI OR 807374-47-6/BI OR  
              807374-61-4/BI OR 807374-74-9/BI OR 807374-75-0/BI OR  
              807374-98-7/BI)

L3           STR

L4           0 SEA SSS SAM L3

L5           STR L3

L6           5 SEA SSS SAM L5

L7           1148 SEA SSS FUL L3

L8           4 SEA ABB=ON   PLU=ON   L7 AND L2  
              SAV L7 TRU578/A

FILE 'HCAPLUS' ENTERED AT 11:37:57 ON 15 APR 2009

L9           1604 SEA ABB=ON   PLU=ON   L7

L10          1 SEA ABB=ON   PLU=ON   L9 AND L1

L11          191 SEA ABB=ON   PLU=ON   L9(L)PREP/RL  
              E   ELECTROLUMINESCENT DEVICES/CT

L12          77652 SEA ABB=ON   PLU=ON   "ELECTROLUMINESCENT DEVICES"+PFT,NT/CT

L13          109 SEA ABB=ON   PLU=ON   L11 AND L12  
              E   CONDUCTING POLYMERS/CT

L14          21853 SEA ABB=ON   PLU=ON   "CONDUCTING POLYMERS"+PFT,NT/CT

L15          3 SEA ABB=ON   PLU=ON   L13 AND L14

L16          4 SEA ABB=ON   PLU=ON   L13 AND ?CONDUCT?(2A)POLYMER?

L17          21 SEA ABB=ON   PLU=ON   L13 AND ?CONDUCT?

L18          21 SEA ABB=ON   PLU=ON   (L15 OR L16 OR L17)

L19          41 SEA ABB=ON   PLU=ON   L13 AND PRP/RL

L20          53 SEA ABB=ON   PLU=ON   L18 OR L19

L21          25 SEA ABB=ON   PLU=ON   L20 AND (1840-2003)/PRY,AY,PY